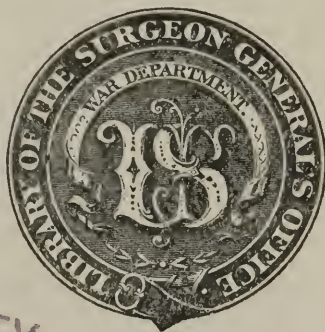


ARMY MEDICAL LIBRARY

WASHINGTON

Founded 1836



ANNEX

ANNEX

Section

Number 70718

Habersham on Diseases of the
Alimentary Canal

1

466686

Warr-E

51

DISEASES
OF THE
ALIMENTARY CANAL.

Habersham



PATHOLOGICAL AND PRACTICAL
OBSERVATIONS ON DISEASES

OF THE

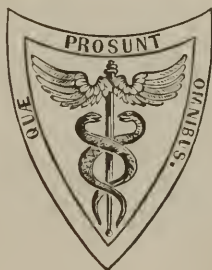
ALIMENTARY CANAL,

ŒSOPHAGUS, STOMACH, CÆCUM, AND INTESTINES.

BY

S. O. HABERSHON, M.D., LONDIN.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS; ASSISTANT PHYSICIAN TO GUY'S
HOSPITAL, AND LECTURER ON MATERIA MEDICA AND THERAPEUTICS;
LATE DEMONSTRATOR OF MORBID ANATOMY, AND CURATOR
OF THE MUSEUM AT GUY'S, ETC. ETC.



70718

PHILADELPHIA:
BLANCHARD AND LEA.

1859.

WI

H114p

1859

CONTENTS.

CHAPTER	PAGE
I. INTRODUCTION	17
II. ON DISEASE OF THE ŒSOPHAGUS	26
III. ON ORGANIC DISEASES OF THE STOMACH	54
IV. ON FUNCTIONAL DISEASE OF THE STOMACH—HÆMATEMESIS	104
V. ON DISEASES OF THE DUODENUM	123
VI. ON MUCO-ENTERITIS AND ENTERITIS	134
VII. ON STRUMOUS DISEASE OF THE ALIMENTARY CANAL	146
VIII. ON DISEASES OF THE CÆCUM AND APPENDIX CÆCI	166
IX. ON DIARRHŒA	192
X. ON COLITIS AND DYSENTERY	203
XI. ON TYPHOID DISEASE OF INTESTINE	230
XII. ON COLIC	233
XIII. ON CONSTIPATION	242
XIV. ON INTERNAL STRANGULATION—INTUSSUSCEPTION—CARCINOMA OF THE INTESTINE	254
XV. ON INTESTINAL WORMS	289
XVI. ON PERFORATION OF INTESTINE FROM WITHOUT—ABSCESS IN THE ABDOMINAL PARIETES, EXTENDING INTO THE INTESTINE—FÆCAL ABSCESS	294

PREFACE.

DISEASES of the Stomach have, during the last few years, received considerable attention, and our medical literature has been enriched by the labours of Budd, Handfield Jones, Chambers, Brinton, and others. Much, however, still remains to be done; and whilst some of the facts contained in the present volume will tend to confirm what is already known, other new ones will be found which, we trust, will repay an attentive perusal of its pages.

The greater part of the facts recorded in the chapters on diseases of the œsophagus, and on organic diseases of the stomach, have already appeared in the pages of the *Guy's Reports* for 1855 and 1856; and those in connection with diseases of the intestine were intended originally to be printed at the same time; such was found to be impossible, on account of the limited space allowed to each contributor. It has been designed to illustrate the diseases treated upon, by cases which have come under our personal observation, with a few remarks upon them, and some general deductions. During the period of our curatorship of the Museum at Guy's, and demonstratorship of Morbid Anatomy for several years, very numerous opportunities were presented of noticing these diseased conditions in their varied phases; and we would tender our sincere thanks to those colleagues who have permitted the mention of instances under their care. Although we have sought definitely to distinguish some marked classes of diseased conditions, we should be very unwilling to regard them as entities superadded to the human frame, but rather, to quote the words of Sir John Forbes, "as new phases of vital manifestations."

Life may be considered as the resultant of certain forces, manifested in the performance of functions combining together for one harmonious purpose; it has received very varied appellations, each indicative of our inability to discover its real character; thus, we have had vital force, power of growth, nutrition, development, organization, nature, &c., each new observer considering himself more

clear-sighted than his predecessor, although he has merely substituted one term for another. This living force is in close correlative relation with other physical forces, and the fuller investigations of physiological science show that the same are in operation, the force of gravitation, of chemical action, &c., in the living organism, as without it; modified, it is true, by another, namely, life. And as in the science of physics generally, so in the study of living phenomena, we must always bear in mind that a like cause always produces a like effect. Vague observation, and the superficial remarks of some writers, would lead us to suppose that, in living phenomena, the same cause is followed, at first by one effect, then another; interpreting fixed realities by prejudice rather than by reason.

Some phraseology is necessary to express our meaning and ideas, and one great difficulty is overcome, if we can understand that the same words convey to each the same thought. It may be convenient, as we have mentioned, to regard life as the resultant of certain forces, and disease as a deviation from the normal direction. If any of the forces which are in natural operation be modified in intensity, a deviation is the result, and diseased action produced, the resultant being necessarily changed; still, the tendency is such, that on the withdrawal of the modifying force, the normal course is reassumed. Not only may it be natural force which has led to this departure from the healthy state, but new force is added, as much as when the earth in its orbit is disturbed by the attraction of some other celestial body.

In diseases, many sources of change arise—modifying forces—thus syphilitic or miasmatic poison, smallpox, &c., alter the character of every function; new substance is added as much as in the voltaic battery, in which the fluid in one or other cell may be changed by any substance added to it; this may be merely of the kind already existing, or a foreign body; in any case, the phenomena—the same in general development—is modified. Such, to some extent, is the case in pathological change. These changes produced by perverted nutrition, or altered vital forces, are in many instances of such a character, that no examination of the structure itself could discern the state which had been produced; as fruitless would it be to search in the nerve of a limb for the altered force which had led to spasm, as to expect to find a telegraphic message by a microscopical examination of the wire, although the structure of both had been transiently modified by the disturbance of the

forces they transmitted. If the character of the change in disease is one, which, like a polar force, reverts to its former condition, no trace can be found on inspection, but, in many instances, obvious structural changes are the result.

Diseased action, however, as generally manifested, is the resultant, not of one, but of various changes in the normal condition, and very few persons are literally in perfect health. The living forces are modified by hereditary tendency, as struma; to this, perhaps, is added syphilis, to that miasm; still further sudden changes of temperature, improper supply of nourishment, of heat, and light; each of these may act as fresh sources of deviation from the normal healthy direction of living action, superadded to the resultant produced by the previous combination.

Some have supposed that acute disease quickly passes off, and that with the subsidence of the more marked symptoms no trace is left behind, but very generally this is not the case; the attentive study of pathology will soon convince of the contrary; new exciting causes of disease arise, perhaps of a different character, but the resultant (to revert to the previous phraseology of forces) was not precisely the same, the former diseased state acts as a modifying force. This course may be often repeated, and if the changes have been such as to entail discomfort or weakness, chronic disease is said to exist; but if without these, the patient generally passes for one in sound health. It is the acumen of the practical physician that detects the trace of previous morbid action, and he alone knows how rightly to estimate the course likely to be assumed by any new addition to a state widely diverse from that of health; hence, also, the variety of diseases by which the same organ is affected, the causes are different, and necessarily their effect.

It is the province of medical science rightly to estimate the effects produced on vital action by any disturbing causes, and their almost endless varieties; several general characters lead us to group these effects into classes; and although in this volume we have spoken of diseased action as manifesting itself especially in the alimentary canal in the changes there described, and the symptoms depicted, it will be found that these parts are in many cases only affected in common with the whole economy, or that the special manifestation of morbid action is there.

Various are the means available for checking and modifying diseased action, and we must protest against the ignorance of those

who regard the draught of medicine as the only important agent. The skill of the physician is often most manifest in the detection and suggestion of means which by many may be assumed as of trifling moment; and whilst it is perfectly true that many morbid conditions cease after a time, or that the frame becomes so accustomed to perverted action that the balance of functions is apparently maintained without marked discomfort to the patient, still most powerful means are left to us. The first to which we must refer are those agents which are in constant operation in the maintenance of life—in one state preservative of health, in another the cause of disease—as the character of the air breathed, whether saturated with moisture, poisoned with miasm, or with the decomposing effluvia of crowded cities, and that found in more elevated situations, on the sea or its coast, &c.; so also with reference to diet, to light, to clothing, to temperature, to habits of mental or bodily training or exercise; the right use of all these are not less important in the restoration to health than in the maintenance of it, and in both cases alike, are within the province of medical science.

Too frequently medicine is taxed to obviate the disease whilst its cause is pertinaciously adhered to. It is in vain we recommend to the dyspeptic patient remedies which would certainly mitigate his disease, whilst the intense anxiety remains, hurried half-masticated meals at irregular hours, or taken intemperately—or, again, to direct means to relieve a disturbed brain, whilst excitement is added to excitement, the senses stimulated by light, noise, animated conversation, and active thought—or to give opium to check peritonitis, to quiet muscular movement when the patient is allowed to move about.

The consideration of the fundamental conditions of life not only demands strict attention, as in themselves allowing vital action to assume its natural tendency, but also in enabling us to use and apply other powerful and valuable means which are at our disposal; and we are at no great loss to understand the intellectual power and acumen of those who, because everything is not known in the pathology and treatment of disease, would contemptuously discard that which is known and established. We deplore the ignorance of those who know not the value of opium in peritonitis, &c., of iodide of potassium in secondary syphilis, of purgatives and mercurials in hepatic engorgement, of preparations of steel in many forms of *anæmia*, of quinine and arsenic in intermittents. Our object is not to confute errors which arise from wilfully closing the eye to light

already attained, but to seek to add facts upon which science may safely advance.

We have generally divided the chapters according to the anatomical divisions rather than in a strictly pathological manner. The first chapter contains many interesting cases of disease of the Œsophagus, some of them obscure in their pathology, and very insidious in their origin. Some instances of ulceration perforating the trachea or bronchi, which we have described, have generally, and we believe incorrectly, been considered as instances of cancerous disease. The forms of disease of the stomach, the subject of the next section, have obtained from authors very considerable attention. We believe that there are forms of ulceration, superficial and evanescent, which leave scarcely more trace in the mucous membrane of the stomach than the aphthous ulceration of the mucous membrane of the mouth; whilst others are permanent, and show themselves after death—and that in some respects we find the same forms of diseased action in the mouth as in the stomach, the inflammatory congestion, perverted epithelial growth and secretion, sluggish condition of the circulation, or acute inflammatory disease, as stomatitis, as well as fibroid and cancerous disease. Ulceration of the stomach is probably a more common condition than is generally supposed, and in many instances yields to judicious treatment. The instances we have adduced show that there are several distinguishing marks by which it may be known from cancer. Fibroid degeneration of the pylorus has generally been considered as of a cancerous nature; and, whilst we are unable to remove this almost certainly fatal form of disease, we may, as in cancer, do much to mitigate the symptoms and to prolong life. During the time that this work has been in the press, the investigations of Dr. Murchison on gastro-colic fistula have been published; and we are indebted to him for them. He has shown, by extensive research, the pathology of these cases by collecting the experience of numerous observers. In the two or three cases that have come under our own observation, it has appeared that cancerous growth in the stomach had led to adhesion with the omentum or colon, or both, that new product has become effused, and the mucous membrane of the colon infiltrated, and the perforation taken place from the disintegration of this secondary product, rather than by direct perforation from the part primarily affected. This appeared to be the reason, in the case we have recorded, that no fecal vomiting took place.

In the so-called functional disease of the stomach, chemical re-

search has removed much that was obscure, and will do still more to clear up the pathological changes induced; and the investigation of the physiological connections of the sympathetic nerve, and the branches of the semilunar ganglia, will enable us more correctly to estimate the very varied symptoms produced in dyspepsia, many of which have their origin in this source.

The chapter on the Duodenum presents us with instances of disease which closely simulate disease of the pyloric extremity of the stomach.

The next chapter is on Gastro-enteritis and Enteritis, diseases in which correct diagnosis is very important. In the latter class of disease especially, life may be easily sacrificed by time thrown away, and by improper treatment. In the former, with judicious diet, warmth, demulcents, &c., recovery generally takes place. Whilst we strongly recommend, in many of these instances of gastro-enteritis, the avoidance of mercurials, the value of salines, of bicarbonate and chlorate of potash, and carbonate of soda, are well known to those who have carefully watched the effect that has followed their administration.

In the chapter on Strumous Disease of the Intestine and Peritoneum, we have sought to show that these are only part of a general perverted nutrition, and that, in many instances, disease in other organs is entirely obscured by the more marked affection of the abdominal viscera. Here, also, we should strongly urge the avoidance of mercurial medicines and of drastic purgatives. The lives of many delicate children are sacrificed by worm powders and quack nostrums administered in these diseases.

The next class of cases in Chapter VIII. is on diseases of the Cæcum and its Appendix. We have shown that very many instances of cæcal distension and of local enteritis arise, as well as the more serious class consequent on perforation of the appendix. We have given numerous instances of these forms of affection; and their perusal will show the great similarity in the symptoms and their general course. Dr. Burns, in a valuable paper in the *Medico-Chirurgical Transactions*, described, several years ago, some of these affections. It would appear that the symptoms of cancerous disease of the cæcum are different from simple cæcal enteritis and perforation, and that in many cases we may discriminate the character of the complaint. It will be found that treatment may do much to relieve and to assist the cure of cæcal disease. The pain seeks

for rest; but it is well, after the acute pain has subsided, still to maintain absolute repose for several days. The bowels are often confined; but the use of purgatives generally aggravates the disease without effecting the desired operation. It is better obtained by the application of leeches and by opium. The use, also, of mild mercurials with opium, in these cases, appears to hasten the subsidence of the morbid condition.

In the ninth chapter, we have pointed out the characters of the several forms of Diarrhœa; but we are well aware that diarrhœa is merely a symptom of very varied conditions, and that in many instances it passes almost imperceptibly into dysentery.

Dysentery and Colitis are the subject of the tenth chapter; and the instances we have adduced show that inflammation of the colon, of most severe form, arises in our own country. Most of the writers on this subject are those who have observed it abroad in its worst forms. In some of the cases, typhoid fever was simulated; in others, perforation of the colon had taken place; in one, there was pyæmia and commencing suppuration in the liver; in several chronic cases, the secondary effects were shown in producing contraction of the intestine, perforation, and artificial anus, &c. As regards abscess in the liver, in one the abscess had dried and contracted; in another, fresh diseased action was set up around it, and abscess in the brain the result. We must confess that in some of the most severe forms all treatment is ineffectual to cure, whilst it partially soothes and relieves; but, in the great majority of instances, demulcents by the mouth, and enemata, astringents used in a similar manner, opium, ipecacuanha, &c., avail to stay the disease, and shorten its duration.

We had intended to have given some observations on Asiatic cholera, but for several reasons have not done so; firstly, because, although the disease manifests itself more apparently in the disturbed functions of the alimentary canal, it has not been clearly shown that the disease is really one affecting alone or principally the abdomen; and, secondly, all the facts known in reference to this disease are better and more clearly given in the report drawn up by Dr. Baly and Dr. Gull.

In the chapter on Typhoid Fever, we have merely described the condition of the abdominal affection, without entering into the general question of fever and its treatment. In the latter, it is well to guard against the danger of so freely administering opiates to check diarrhœa as to lead to cerebral oppression, and excessive engorge-

ment of the lungs, from imperfect performance of the respiratory function.

In the chapter on Colic, we have cursorily spoken of the simpler forms of the disease, and have separated the more severe forms of ileus, internal strangulation, intussusception, and cancerous disease of the colon, in Chapter XIV. It will be found that, whilst the latter conditions bear strong general resemblance in producing often fatal constipation, they may, in many instances, be distinguished, the one from the other; intussusception having close resemblance to simple colic, and, in not a few instances, accompanied by discharge of bloody mucus, or with actual diarrhœa. This latter symptom sometimes arises even with cancerous disease of the sigmoid flexure. We have very strongly urged the avoidance of drastic purgatives, calomel, colocynth, and even milder purgatives, and as strongly recommended the free administration of opium. The cases detailed almost uniformly show that, where purgatives were given, vomiting, pain, and distress were increased; whilst these and other symptoms were, on the contrary, relieved by opium. Opium, in such cases, appears to be the best means of procuring relief to the bowels, if it be possible. In the chapter on Worms, we have designedly been as brief as possible.

The cases of Suppuration in the Abdominal Parietes, and of Perforation of the Intestine from Without, are an interesting series, many of them obscure in their diagnosis, and very varied in their course. Great care is required, attention to the symptoms as they become fully developed, and the avoidance of hastily aggravating the symptoms by too active treatment.

The cases we have recorded might have been given at greater length, and on each one fuller remarks made. Such has not been the design of the work, but rather in a very few words to point out the peculiarities of each, embodying in more general deductions the apparent conclusions derived from the whole. It is hoped that what has been adduced will shed some light on the difficulties which often present themselves in the daily practice of the profession.

Fig. 4.

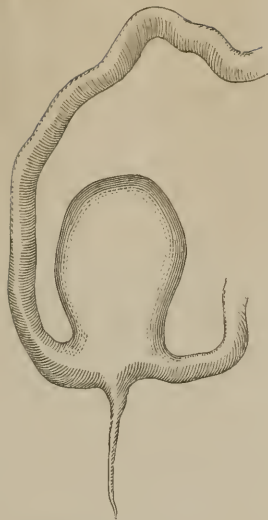


Fig. 4 (Pl. IV. fig. 1). Cæcum inverted, appendix towards the pelvis, where it was adherent; ascending colon commencing opposite the ileum. Case LXXXVI. p. 177.

Fig. 5.

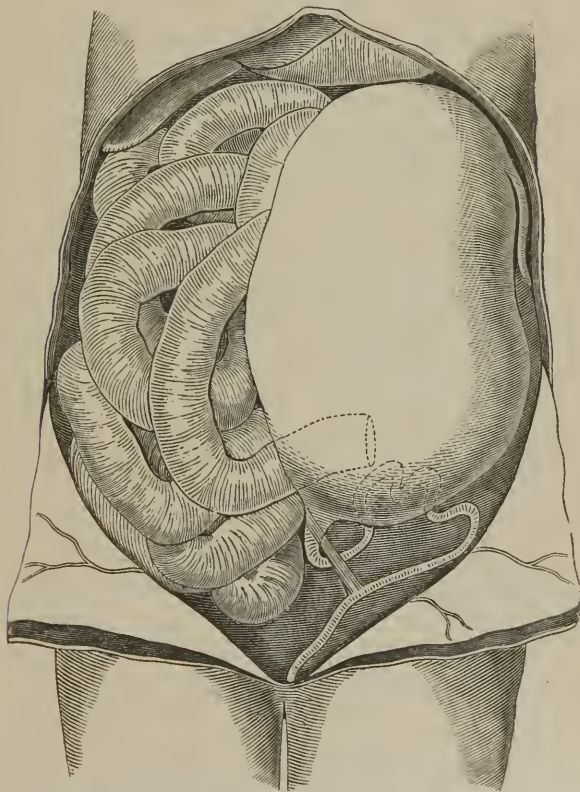


Fig. 5 (Pl. IV. fig. 2). Cæcum inverted and twisted on its own axis into the left hypochondriac region, appendix close to the spleen; ascending colon constricted; constriction increased by band of adhesion to the sigmoid flexure, which appeared to have been the primary cause of the fatal twist and obstruction. Case LXXXVII. p. 178.

CONTENTS.

CHAPTER	PAGE
I. INTRODUCTION	17
II. ON DISEASE OF THE ŒSOPHAGUS	26
III. ON ORGANIC DISEASES OF THE STOMACH	54
IV. ON FUNCTIONAL DISEASE OF THE STOMACH—HÆMATEMESIS	104
V. ON DISEASES OF THE DUODENUM	123
VI. ON MUCO-ENTERITIS AND ENTERITIS	134
VII. ON STRUMOUS DISEASE OF THE ALIMENTARY CANAL	146
VIII. ON DISEASES OF THE CÆCUM AND APPENDIX CÆCI	166
IX. ON DIARRHŒA	192
X. ON COLITIS AND DYSENTERY	203
XI. ON TYPHOID DISEASE OF INTESTINE	230
XII. ON COLIC	233
XIII. ON CONSTIPATION	242
XIV. ON INTERNAL STRANGULATION—INTUSSUSCEPTION—CARCINOMA OF THE INTESTINE	254
XV. ON INTESTINAL WORMS	289
XVI. ON PERFORATION OF INTESTINE FROM WITHOUT—ABSCESS IN THE ABDOMINAL PARIETES, EXTENDING INTO THE INTESTINE—FÆCAL ABSCESS	294

ON

DISEASES OF THE ALIMENTARY CANAL.

CHAPTER I.

INTRODUCTION.

LIFE, health, and comfort are essentially connected with the performance of the function of digestion; when it deviates in but a slight degree from the normal standard, discomfort, in various degrees, is the result; and he is, indeed, a fortunate man who can pass through his daily duties without the thoughts and attention being directed to those operations for the solution, absorption, and assimilation of nourishment, which in health are performed throughout, without any attention, sense of pain, or discomfort. If there be greater derangement of these functions, not only is the attention directed to them, and discomfort entailed, but there is reaction upon the higher capabilities of man's nature; the brain becomes less able to perform its functions, the judgment, the will, the memory, the whole power of thought and intellect, are less free to guide the man in his daily duty, avocation and research. The muscular movements and power are diminished, and the pleasure of life changes to daily suffering and anxiety. Contrast the vigour of mind and body during health with the enfeebled energy of the dyspeptic and hypochondriac. The former knows no impediment to the exercise of deep thought and labour, in any sphere that the mind may dictate; the whole attention of the latter is absorbed by those functions which are at best only subservient to the manly exercise of mind and will.

If the digestive process be altogether checked, and no new supply of nourishment absorbed and assimilated, no fresh restoration of the waste entailed by the exercise of every function, life must sooner or later cease; and disease, in its ravages, presents few spectacles more distressing to witness than the gradual wasting of the frame, and cessation of life itself, from the non-supply of food. Thus the whole system sympathizes with disorder of the alimentary canal.

A knowledge of the structure and functions of each part of the digestive apparatus is necessary to the right understanding of its diseases. Its structures are various, and its sympathies universal; but in health these are so combined as to form a beautiful and harmonious whole. Thus, 1st. We everywhere find a mucous membrane lining the alimentary canal, and very richly supplied with glands, either for its lubrication, or to pour into it secretions which are necessary for its due exercise, acting physically or chemically; and excretions or substances, by this means, are discharged from the blood, as noxious or effete principles. 2d. Beneath the mucous is the muscular coat, necessary for the execution of the required movements, and the propulsion of the contents. 3d. The peritoneal or serous covering, which by its smoothness enables movements, where such are required, to be performed by one portion of the intestine upon another, or allows distension to take place. 4th. The binding tissues, which are found between these previously mentioned tunics, and which support the still more essential parts. 5th. The supply of blood, by means of vessels and capillaries; and, 6th. The supply of nervous power from the sympathetic nerve. As Abercrombie has remarked, in reference to diseases of the stomach—so, also, in reference to every part of the alimentary canal—for the proper performance of the function of digestion, the mucous membrane must be in health, the secretions normal, the supply of blood and nervous energy such as required, and the movements free. It must, however, be borne in mind that the alimentary canal contains substances which are, strictly speaking, external to the living agency and control of animal life; and that those chemical forces which we find in operation external to the body, act in the same manner within the stomach and small and large intestines; the food becomes dissolved when the same solvents are provided, and other circumstances adapted, as to temperature, movements, &c., equally in a phial as in the stomach. The fermentation of its contents takes place in the stomach and canal, as well as in any chemical receiver; and these facts have to be remembered in the study, as well as in the treatment, of disease. Chemical force is in operation throughout the whole animal economy; it is modified and controlled by the living power, or it is free to act alone.

Each of the parts which have been mentioned may be alone diseased, or all conjointly; the symptoms arising from each are in some cases distinct, in others we cannot separate the one from the other.

1. Mucous membrane and its secretions. The derangement of these constitutes, perhaps, the greater part of the milder ailments of the alimentary canal. The symptoms vary according to the part affected: in the stomach, producing some of the various forms of dyspepsia; in the intestines, constipation, diarrhoea, &c. But where the mucous membrane alone is affected, it appears probable that pain is not produced, and this is a merciful provision. The lining

membrane is exposed to varied causes of irritation, but we do not experience pain; if such were the case, every portion of undigested food might produce discomfort; in some cases severe pain is found in indigestion, but this arises from an extreme sensibility of the sympathetic and nervous supply of the stomach, &c., and is not due to the mucous membrane.

Dr. Beaumont, in his observations on the stomach of Alexis, sometimes observed the mucous membrane dry, injected, and much irritated without the production of pain; so, also, I have observed actual inflammation of the stomach, as found in cases of poisoning by oxalic acid, of chloride of zinc, and even of arsenic, without pain from first to last.

2. The muscular coat we find so stimulated, that it rapidly contracts, and impels onwards its contents, or is enfeebled so as to retain them; sometimes spasmodically contracted, or dilated, as in the forms of colic and flatulent distension, &c. These conditions appear to be productive of pain, sometimes of a very intense form, as we find in the griping of colic, in enteritis, &c. As long as the peristaltic action is uniform, regular, and healthy, we are unconscious of the movement; but as soon as it becomes irregular, tumultuous, retarded, or spasmodic, we are sensible of discomfort, or severe pain; the muscular coat of the intestine is probably excited to contraction by the direct stimulus of its contents, but the harmony of its movements is due to the supply of nervous influence which it receives.

3. The peritoneal or serous investment. This, also, generally manifests its derangement by pain; and here, again, is a wise provision, for as its disorders require rest, or rather an absence of movement of the coils of intestine one upon another, the pain of peritoneal disease is increased by muscular exertion, so that the patient becomes prompted to assume that position, and to retain that state, which is best suited for the restoration from disease. The observant pathologist and physician knows, practically, the importance of rest in the recumbent position, and follows the teaching of nature in his stringent directions: by this means inflammation is localized, and where perforations of the intestine have taken place, the injury is limited and life may be prolonged.

4. The state of the investing or binding tissues, and the supply of blood, are important considerations in the study of these diseases of the intestine. The former, in some cases, appears to be the seat of fatal malady, as in the form of constriction of the pylorus, and in cancer. Still more does the supply of blood call for attention: it may be in excess, as in active or passive hyperæmia; in pulmonary, cardiac, or hepatic disease the engorgement of the mucous membrane leads to peculiar and characteristic symptoms; the rupture of vessels, or ulceration into them, causes hemorrhage into the canal; and again, a scanty supply or depraved condition of blood prevents the proper performance of digestion, as in great hemorrhage, in over-lactation, in purpura, scurvy, or starvation.

5. The state of the nervous supply is often lost sight of; it is a most complicate system of nervous fibrils and ganglia, in the most intimate connection with the cerebro-spinal centres, and the ganglionic centres of other parts—of the lungs, the heart, and the urino-genital organs. Many of the signs of intestinal disease arise from this cause, and they have been dwelt upon by various authors. In the Guy's Reports of 1856, I have described some dissections and observations on this supply of nerves; it surrounds the vessels, is distributed with them, and reaches every part of the intestine. The sympathy of abdominal disease with other organs is due to this supply. In indigestion, we find cephalalgia, depression of spirits, impaired mental energy, disordered sensations of general or special sense—all this arises from the connection of the sympathetic and the cerebro-spinal nerve. So, again, the throbbing of the vessels, the excited or irregular action of the heart in dyspepsia, are from the union of the cardiac ganglia with the solar plexus of nerves, which supply the stomach, &c. In the lungs, the kidneys, the uterus, we notice similar sympathetic disturbance, and oftentimes, in a most marked manner, the skin is observed in close connection with the internal mucous membrane. Disordered alimentary canal induces many forms of cutaneous eruption, as in urticaria from partaking of mussels; or the more chronic diseases of lepra, eczema. These sympathies may, however, be due to the vascular condition, as well as the nervous relation, of one structure with another. This relationship of parts, however, sometimes acts in a reverse direction; the alimentary canal is affected, secondarily, from disease of other structures—for example, the vomiting which we find in disease of the brain, of the kidney, or of the uterus. But beside these, there appear to be symptoms of primary disease of the alimentary canal which are due directly to the sympathetic nerve. 1. The remarkable depression of the pulse, which we often find in these diseases of the abdomen; the pulse becomes soft and compressible, and often irregular. 2. The sense of sinking and exhaustion, which is often one of the most marked signs of abdominal disease; and even in some cases sudden death, not only in cases when a person may have died from a blow on the epigastrium, but in other instances. A short time ago I observed a man suffering from aneurism of the descending aorta; he endured very severe pain, and the pulse became much enfeebled; in a few days he died comparatively suddenly. On examination, an aneurism of the aorta was found at the diaphragm; it had led to absorption of the bodies of the vertebra, but there had been no extravasation of blood into the peritoneum, the cellular tissue, or other parts. The aneurismal sac was about four inches in length, and one and a half in height; it had pushed aside the pillars of the diaphragm, which were white and degenerated; the splanchnic nerves were stretched across the sac, and the semi-lunar ganglion pushed considerably forward and pressed upon. I think we are justified in believing that in this case the depression, and comparatively

sudden death, were in great measure due to the pressure on the great sympathetic nerve centre of the abdomen. We have, also, often observed, in cases of gastritis from poisons, arsenic, dilute sulphuric acid, chloride of zinc, oxalic acid, that the pulse becomes remarkably depressed, and sometimes, where we might have been led from the absence of pain and other symptoms to have given a favourable prognosis, the patient has suddenly died.

The pneumogastric nerve has an important influence on the stomach. This was shown, in a marked degree, by the experiments of Dr. Wilson Philip, who demonstrated the effect of section of the pneumogastric nerve on digestion, in checking its progress; it does not, however, completely prevent it, but only for a time checks the secretion of gastric juice. The irritation of this part of the pneumogastric sometimes leads to symptoms indicative of disturbance of the pulmonary branches of the same nerve; cough may be set up; and it is probable that the converse takes place; the pulmonic branches may cause reflex influence on the stomachic branches. In the *Medical Times and Gazette*, is a very interesting paper by Mr. J. Hutchinson on the "Dyspepsia of Phthisis;" and many have found in the early stages of phthisis that the power to digest food is impaired, the diminished nutrition tending greatly to promote the deposition of low organized product in the lungs.

Not only do the signs of abdominal disease arise from the derangement of one or other structure of the canal, or the secretions or chemical changes in their contents, but the administrations of remedies are guided by the same considerations. Many may be led to the use of means by mere empiricism, but the observations of Chambers, Turnbull, Budd, Handfield Jones, &c., lead to a more scientific and correct treatment, by directing to the physiological chemistry of digestion or enlightened pathology.

1. Agents are used to check fermentative or chemical action.
2. To remove offending or injurious materials, or excreta.
3. To correct or improve the secretions from the mucous membrane, or those poured into the canal.
4. To affect the muscular coat, and its movements.
5. To alter the state of the circulation and vessels or absorbents.
6. To act on the abdominal sympathetic.

Dr. Headland has directed attention, in his valuable essay on the action of medicines, to their mode of operation, considering them chemically or mechanically, without absorption; then, after entering the blood, influencing either its constituents or the muscular or nervous structures to which it is supplied; and lastly, in their elimination from the body. These remarks forcibly apply to the action of agents in the treatment of abdominal disease. It is, however, often lost sight of, that whilst the alimentary canal is the structure by which remedies can be most easily made to enter the blood, and there exert their curative influence, and that which is generally used, it may be in such a condition from morbid changes that no absorption can take place,

and that such a means of administering remedies may become almost useless, as far as regards their ultimate action after absorption.

1. Agents which are used to check fermentative action or chemical decomposition.

Chemical science has done much, and will do still more, to suggest means of counteracting changes of this character. Dr. Turnbull has dwelt, in his work, on the varied forms of fermentative action, and has shown that some agents possess in this manner considerable power: thus creasote, sulphurous acid and sulphites, charcoal; so also alcohol, &c. We have much to learn on this subject, and it would well repay the labour of some one well versed in chemical science.

2. As agents for the expulsion of injurious matters, or excreta, we have the whole class of emetics, of laxatives, of purgatives, and enemata.

3. To correct the secretions from the mucous membrane—a term which is, I believe, strictly correct, the mucus in the canal being sometimes of such an irritating character that we may do much to change its state after secretion, at the same time that we use means to prevent such abnormal character of secretion from taking place—demulcents are thus used: milk, arrowroot, gum acacia, linseed, or lime-water, chalk, solution of potash, carbonate of soda. At the same time, to diminish inflammatory congestion, other agents are called for, as ipecacuanha, salines—as potash, or soda, magnesia, and some of their salts, or mercurials, antimony, &c. If to correct secretions arising from enfeebled or relaxed state of the membrane, we have vegetable and mineral astringents and tonics, mineral acids, &c.; others stimulate to greater secretion, where it may be deficient, as some irritants, ipecacuanha, salt, capsicum, pepper, &c.

4. Among remedies which act on the muscular movements of the intestine, increasing or diminishing peristaltic action, I may enumerate among the former, the class of purgatives, magnesia, and strychnia; among the latter, conium, opium, henbane.

5. Those which act on the sympathetic nerve, diminishing its sensibility, are chloroform, hydrocyanic acid, opium, bismuth, oxide and nitrate of silver; as tending to increase its sensibility, steel, quinine, vegetable and mineral tonics, alcohol, &c.

These remedies are variously combined in the treatment of disease, sometimes modifying each other in their action, or increasing their efficiency, or enabling the mucous membrane so to tolerate them, that they become absorbed, and act with benefit.

The rules of diet, the administration of proper and suitable food, is one of the most important subjects in diseases of the intestine; as in other visceral diseases we cannot obtain rest of the affected organ, but we can shield it from unnecessary irritation or fresh excitement. These few remarks are sufficient, as to the different structures affected by remedies, and some indication of the principles which should guide us.

It will often be found that the state of the nervous system modifies the effect of remedies. If a highly sensitive patient, hysterical or hypochondriacal, be led to suppose that a medicine will produce a certain effect, the mind is so directed and influenced that a powerful action may be produced; or if a patient firmly believe that a particular medicine or treatment will do him injury, we shall, in all probability, find that the symptoms are described as greatly aggravated thereby, which no persuasion can mitigate. Thus, in a patient who had suffered from hemiplegia, and was in a nervous condition, but who could not be persuaded to discontinue medicine, two table-spoonfuls of spring water were followed by violent purging, and when changed for a pill of bread the same effect was produced, and nothing could induce her to take a second pill. She believed them to be powerfully aperient, and purging took place. Hence a wide field is opened for the charlatan and the quack; while the experienced practitioner often finds that in many ailments he will in vain prescribe remedial agents unless he acquires the confidence of the patient.

The connection of one disease with another is a subject of great importance, and of much interest to the practical physician. It is far from frequent to find that a patient has died free from all disease, except the one which has been the immediate cause of death; it is, indeed, the exception to find such a case. It may be, that an acute inflammation of the lungs has led to fatal results, whilst chronic disease may have been going on in the abdomen, the heart, or the brain, perhaps quite independently, but having an important influence on the curative or non-curative condition of the disease: chronic disease creeps along with unobserved step, till some acute affection proves fatal. This relation of disease is worthy of our consideration, in studying the affections of the alimentary canal; and we may find that the diseased conditions arrange themselves in the following manner:—

1. They take place simultaneously in the same body, without any connection—mere coincidents.

2. The connection may be that of different manifestations of the same disease in its progressive action, rather than a really different diseased condition.

3. One disease may have important modifying or predisposing influences upon another.

4. Several organs may be affected simultaneously by one exciting cause.

5. One disease may be antagonistic of another.

6. Other diseases, or abnormal conditions, are conservative the one to the other.

I might enumerate many instances of these associations, in diseases of the nervous system, or of the thoracic viscera, but must content myself with a few illustrations from disease of the abdomen.

1. As coincidents: was that of a patient who had been employed in working lead, and was affected with severe colic. This was

partially relieved, but he suddenly had intense collapse, and died with all the symptoms of perforated intestine. We found, on inspection, that there was in the stomach a large chronic ulcer, and at its base a minute perforation, which had extended into the peritoneal cavity. A child affected with chorea was relieved by sulphate of zinc, and was about to go home, when it was seized with severe dysentery during the time that cholera prevailed, and the little patient died in three days. Or again, in a patient who lately died under my care, affected with phthisis, we found a large hydatid cyst close to the kidney, in addition to advanced degeneration of the lungs. These diseases could not be looked upon as cause or effect, and are probably correctly regarded as coincidents.

2. As manifestations of the same disease in progressive action, and which ought not to be considered as two but as one. Thus, the sympathetic vomiting which we find in hydrocephalus, or in diseases of the kidney or uterus. The diarrhœa in albuminuria, which follows an anasarctous condition of the mucous membrane, or the constipation in diseased spine; the extension of strumous disease affecting one organ or viscus after another, as of the intestine in phthisis. So, again, the severe neuralgic pain in the parietes of the abdomen, simulating colic, but arising from disease of the spine, may be only the early manifestations of the spinal disease, though preceding its more marked indications by several months or years. Numerous instances might be adduced in the progressive symptoms of spinal disease, or of valvular disease of the heart, or of chronic disease of the lungs.

3. One disease predisposing to, or modifying, another. Thus, in affections of the lungs, of the heart, or of the liver, the circulation through the vena porta may become exceedingly impeded, the whole of the mucous membrane engorged and turgid with blood; in this state a slight exciting cause will set up distressing flatulence and distension of the abdomen; chronic catarrh of the mucous membrane is produced, or hemorrhage, or ulceration. A patient in incipient phthisis, with tubercles or slight ulceration in the mucous membrane of the intestine, is exposed to cold and wet, to hardship and miasm, and very severe diarrhœa or dysentery is set up; whilst his friend, who has had no such predisposing causes, escapes, though exposed to the same exciting influence.

The instances which Dr. Budd has deduced, of abscess in the liver following ulceration of some part of the tract of the canal which supplies the vena porta, are also illustrations of one diseased state exciting another; here it does not follow as a necessary sequence, or a continuance of the same diseased action, but a new disease is produced.

Again: a strumous subject, after recovering from typhoid fever, becomes affected with tubercular disease of the intestine. The previous exhaustion has rendered the patient, already of feeble power, subject to another disease; and the typhoid ulceration of the

intestine is sufficient to excite the manifestation of its action: these are by no means rare occurrences.

A sailor was admitted into Guy's, four years ago, with Asiatic cholera. He died, and in his colon a large circumscribed ulcer was found, about the size of a crown piece, and covered by a slough, with adherent cherry-stones; the presence of such irritation and inflammation in the colon would render him more amenable to an attack of the disease, although it would not produce it.

A young man fell into the Thames, and afterwards was seized with diarrhoea; he was shortly attacked with typhoid fever, and admitted into Guy's. He quickly died, the dysenteric diarrhoea rendered the fever more severe in its character, and perhaps was the immediate cause of the fatal termination.

4. Two diseases sometimes arise from the same exciting cause, or rather two organs become affected; thus acute inflammation of the colon sometimes comes on with pneumonia. Of these cases we shall speak more fully in our remarks on dysentery.

5. Diseases are in some instances antagonistic. Cancerous disease and struma appear to be in this relation, or it may be that they are so diverse in their mode of operations that they cannot exist together; an excess of formative action, although quite abnormal, being incapable of existing with a deficiency. We sometimes find in cancerous disease of the abdomen, chronic disease of some of the mesenteric glands, contracted, and calcareous, with old strumous change; such evidently indicates a mode of action which has given place to another of a different kind; and the same kind of deposit is occasionally found in the lung in cancerous disease, which has proved fatal.

6. Disease may be conservative in its character. We have many instances of this in the abdomen. A chronic ulcer of the stomach is prevented oftentimes by adhesions from perforating the peritoneal sac, so that the liver, or the pancreas, forms the base of the ulcer. So again in ulceration of the ileum or colon, in disease of the cæcum, and in gall-stone, adhesions prevent extravasation, or limit it when such takes place. Many instances of this kind might be adduced in which life has been prolonged by these means.

These associations of disease have an important bearing on the correct diagnosis, and still more the prognosis, of disease; they may oftentimes serve to explain its intractable character, as well as the different effect of remedies under apparently similar circumstances, and place us on our guard in making close observation of every sign which presents itself to us, and a strict inquiry into the history of the patient, and the previous ailments to which he may have been subject.

CHAPTER II.

ON DISEASE OF THE ŒSOPHAGUS.

THE Œsophagus is a portion of the alimentary tract more than some others exempt from organic disease, and for these reasons: in the first place, its function is of an exceedingly simple character, being merely to conduct the food into the stomach; and, secondly, the transit of the food is very rapid over its mucous membrane. The close contact of the Œsophagus with many important structures at the root of the lungs sometimes leads to its becoming involved in disease originating in those parts, although this is not so frequent as primary disease of the Œsophagus implicating the latter structures.

The pharynx is the organ of deglutition, and disease of any part of it, or of the openings into it, leads to difficulty in the performance of its function, or dysphagia; but the process of swallowing can scarcely be said to be fully completed until the food is lodged in the stomach; and hence dysphagia becomes one of the most prominent symptoms of disease, not only of the pharynx, but also of the Œsophagus.

The causes of dysphagia are very varied, and are chiefly as follows:—

I. From disease of the tonsils or palate.

II. From diffused inflammation of the cellular tissue of the pharynx or Œsophagus, or from local suppuration, sometimes in connection with disease of the spine.

III. From disease of the laryngeal cartilages, or epiglottis.

IV. From functional or spasmodic stricture of the Œsophagus or pharynx, as in hysteria, hydrophobia, &c.

V. From paralysis of the muscles.

VI. From acute inflammation of the mucous membrane.

VII. From mechanical injury or poisons.

VIII. From structural obstruction to the Œsophagus, as—

1. Constriction;
2. Ulcerations, sometimes communicating with the larynx;
3. Cancerous disease;
4. Obstruction from the pressure of aneurismal or other tumours.

I. *Dysphagia arising from cynanche tonsillaris*, as well as from acute inflammation of the throat, from scarlet fever, or from diph-

theritic inflammation, from syphilitic ulceration of the soft palate, or the fauces, &c., needs only to be mentioned in connection with disease of the Œsophagus.

II. *Inflammation of the cellular tissue of the neck*, associated with pyæmia or with erysipelas, is either diffused, as we find in pyæmia or erysipelas, or a defined abscess is formed.

The latter produces sudden and urgent dyspnœa, with febrile disturbance; and on examining the throat we observe a projection from the posterior fauces, sometimes on a level with the soft palate, sometimes above or below it; the diagnosis is then sufficiently evident, and, when it is possible, puncturing the abscess relieves the urgent symptoms.

When the inflammation is diffused, the patient rapidly passes into a typhoid condition, the dysphagia becomes extreme, the respiration impeded, and, on examining the neck, we find either the erysipelatous redness of the skin or a fulness and tenseness among the infra-hyoid muscles, impeding the free movement of the parts concerned in deglutition. The examination of the neck will generally enable us to distinguish the dyspnœa arising from this cause from that produced by disease of the larynx, or trachea, or from pressure or injury to the nerves of respiration.

In my notes I find the following case, a very interesting one of the kind, occurring in 1847:—

CASE I. *Diffused inflammation of the throat*.—Abraham Stanley, æt. 36, a sailor, of intemperate habits, was admitted into Guy's on October 13, 1847. On the 5th, whilst unloading coals, he received a blow on the back of the hand, and on the following day rigors came on, and pain in the axilla, but the skin of the arm did not become inflamed. On admission, on the 13th, he presented the appearance of a man suffering from typhoid fever; there was delirium at night; pulse very soft, 106; the tongue moist, and the respiration much oppressed; no fluctuation could be found under the pectoral muscle, or any suppuration detected in the neck; and the wound on the hand was dried. Stimulants and opium were administered on the 15th. The respiration was difficult and laboured, 42 per minute; there was evident obstruction of the larynx, and there was some tenderness about it, but scarcely any swelling, and no fluctuation or suppuration could be detected on very careful examination; there was also great difficulty in swallowing. On the 16th, the respiration and deglutition were somewhat easier, but the skin was clammy, and the tongue dry. He died on the following day, after vomiting some blood. On inspection, the whole of the cellular tissue surrounding the muscles of the neck was found infiltrated with pus, but there was none below the pectoral muscles.

CASE II. *Diffused inflammation of throat. Ulceration of pharynx*.—In this case, which was admitted in May, 1847, a woman, aged 66, had sore throat, with pyrexia, quickly followed by typhoid symptoms, and death on the fifth day. On inspection, suppuration was found among the muscles of the neck, which extended round the Œsophagus, as low as the root of the lung. In the pharynx there were several superficial ulcers, and one opposite the arytenoid cartilage had extended into the cellular tissue. The disease appeared to be an erysipelatous form of inflammation, and of such an aggravated kind as to be quite beyond the reach of remedial measures. Hot fomentations should be used, and ammonia with stimulants administered; it is rare, however, that the suppuration in these cases is sufficiently localized so as to admit of relief by incisions.

III. *Disease of the laryngeal cartilages, or epiglottis*.—Disease of the thyroid or cricoid cartilages rarely, except in cancer, extends to

the pharynx, but much more frequently leads, as in necrosis of these parts, to suppuration among the muscles of the neck, or to chronic laryngitis of a most intractable form. We seldom see great difficulty in swallowing from disease of these cartilages, but the reverse is the case when the epiglottis is affected, whether the ulceration arise from syphilitic, phthisical, or cancerous disease. In syphilis both the glossal and laryngeal surfaces of the epiglottis become diseased, and sometimes nearly the whole is destroyed, leading to distressing dysphagia; and in phthisis this ulceration of the epiglottis is one of the most trying complications of the complaint, the ulceration extending on its inner surface as far as the margin, which becomes eroded and gradually destroyed, so that the contact of food, &c., with this irritated surface, leads to its instant rejection, sometimes through the nares. In chronic phthisis I have seen this condition attributed to organic disease of the œsophagus itself, from the extreme urgency of the dysphagia, and from the food appearing to have passed below the pharynx before it was forcibly ejected. It sometimes happens that solids are more easily swallowed than fluids; and this is the case in some instances where the dysphagia arises from diseased larynx—a solid will pass over the diseased surface, falling beyond it, whilst a fluid comes in close contact with it.

This condition is often greatly relieved by inhalation of steam, or by the fumes of conium or stramonium; in less severe cases astringent gargles, or the application of a strong solution of nitrate of silver, afford comfort by diminishing the extreme sensibility; or counter irritation may be applied with advantage—the tincture of iodine, hot fomentations, cantharides, &c.

IV. *Spasmodic stricture of the œsophagus*.—The few cases of this kind which have come under my own observation have been in young women of an excitable nervous system, with leucorrhœa or painful menstruation, and impaired digestion. The strongest language was used by these patients to express their inability to swallow, and they showed the greatest unwillingness even to attempt it. One of these was a young woman about 23 years of age, thin, and imperfectly nourished. No obstruction whatever was found on passing an œsophageal bougie, and she afterwards swallowed food in small quantities, increased day by day until she took the usual amount. Lesser degrees of this condition are not unfrequent in *hysterical* subjects; and, as the symptoms of hysteria are well marked in them, there is little danger of mistaking the complaint for cancerous obstruction, although there may be greater difficulty in diagnosing it from perforating ulcer extending into the trachea.

This state, however, is not limited to one sex, but in great nervous susceptibility may be induced in men. Spasmodic contraction of the œsophagus tends to increase the obstruction arising from organic causes, so that the degrees of dysphagia in the same case, differ exceedingly; even without organic disease the difficulty in swallowing will continue in paroxysms of greater or less severity for several

years. The general symptoms and history aid us in the diagnosis of these cases, as the absence of emaciation, the suddenness of the attack after a slight cause, as nervous shock or slight catarrh; the absence of pain; the existence of considerable nervous excitement.

Hot fomentations, the use of fluid instead of solid food for a short time, aperient or antispasmodic enemata, as of turpentine or rue, will afford relief in these cases; tonics are often of service, as the compound iron mixture, with decoction of aloes, or the compound steel pill, with aloes and myrrh—quinine, zinc, valerian, vegetable tonics, and with these good air and exercise, and cheerful occupation of the mind.

Bougies are often employed, but their use is not generally beneficial, and may be detrimental in tending to perpetuate and aggravate a state of spasmodic irritation and contraction, unless we can in this way introduce nourishing food into the stomach; but in cases where the muscles appear to have lost the power of contraction, the introduction of food in this form is absolutely required.

In some cases of hysteria, the refusal to swallow arises rather from a disordered will than from any disease in the œsophagus itself.

The most marked true spasm of the pharynx and œsophagus is found in *hydrophobia*. Two years ago, a case of this terrible disease occurred at Guy's. On post-mortem inspection, besides great congestion of the membranes of the brain and spinal cord, the pharynx was the only part affected, and the appearance here was very peculiar. The organ appeared more than twice its natural capacity; the constrictor muscles retracted to the utmost; the fauces exceedingly large, from the rigid contraction of the soft palate; and every part appeared expanded to the utmost. The mucous membrane was injected, and covered with some mucus. The œsophagus, also, was contracted; the lungs intensely congested; the other viscera healthy; but there was emphysema of the neck. The symptoms during life indicated extreme irritability of the nerves supplying the pharynx—in fact, of all the branches of the fifth and pneumogastric nerves.

CASE III. *Hydrophobia*.—The patient was a young man, aged 23, who was said to have been bitten by a dog nine years previously. On the day of admission into Guy's, May 15, 1854, difficulty of swallowing came on, and great mental excitement. He was removed to one of the adjoining work-houses, and afterwards brought to the hospital, about nine o'clock in the evening. He was a strong, muscular man, and at first sight appeared to be affected with acute mania, or delirium tremens; but there was a sudden starting, especially when a draught of cold air came in contact with his face, which more clearly indicated the character of the disease. This starting evidently resulted from spasmodic action of the muscles of the face and pharynx. His countenance had a wild and excited aspect; he thought that he was being murdered, that boiling water was dropping upon his face, and he said that he felt choked. The pulse at nine o'clock was 90, at eleven it was 120; the tongue clean, the pupils widely dilated, the face bathed in sweat, the hands clammy; he would not attempt to drink, but dashed the cup away from him with a violent spasmodic action, but he ate a small portion of bread; he was frequently spitting out saliva. Restraint was required, for in his terror, which was fearful to witness, he rushed at the window, and would have seriously injured himself. I remained with Dr. Gull for several hours during the night with this patient, a witness of one of the most fearful spectacles of misery and disease I have ever seen. About 12.30, an injection, containing ten grains of cannabis indica,

was administered; the whole of the enema was at once returned. At one o'clock a longer tube was passed, and the same quantity again injected; the paroxysms had then become very violent and frequent, and the pulse exceedingly small, varying, and occasionally intermittent, 120 to 130 per minute. At 2.15, he was still more violent, calling out as loudly as his strength would permit him. It was then determined to administer chloroform. Intense congestion of the eyes and face came on; the pupils became much smaller, the pulse a little more perceptible; the respiration, which had been catching and accompanied with gasping and sighing, became more regular. In four or five minutes after leaving off the chloroform, the paroxysms began to return; the face, however, did not at once become sensible to impression. Chloroform was administered three times during the hour, and, on leaving it off, the same return of paroxysm took place; the pulse became almost imperceptible, and the respiration more stertorous. About 3 A. M., whilst under the influence of chloroform, ten grains of *cannabis indica* were placed in his mouth; it became mixed with saliva, but was all ejected. He died at 3.30, from exhaustion and apnoea.

V. *Paralysis of the muscles of deglutition* is generally observed immediately to precede those of respiration, and is looked upon, correctly, as a common sign of approaching death. The nervous centre of the function of swallowing is close to that of respiration, and there is an intimate connection between them. Where there is this loss of power, placing fluid in the mouth will be followed by its entrance into the larynx, or by violent cough, or it may even hasten death.

We not unfrequently, however, observe, in cases of hemiplegia, where the muscles of the tongue are paralyzed, that swallowing becomes exceedingly difficult, especially with solids. This difficulty appears to arise from the movements of the tongue being restrained, the bolus of food cannot be formed, and pushed back into the fauces; fluids are more easily swallowed, because more readily brought to the action of the true muscles of deglutition.

Another class of cases are those connected with mental disease, some of which may easily be mistaken for true paralysis. With great feebleness of muscular power, we may find that the will is unable to excite muscular action; that the muscles of the pharynx appear paralyzed, because they are not stimulated to healthy contraction, and hence deglutition becomes apparently impossible. The following interesting case, admitted under my care into Guy's, July, 1856, is of this kind.

CASE IV. *Dysphagia. Mania*.—He was an emaciated man, aged 60, a gas-fitter, residing at Deptford, of a dingy, sallow appearance. His wife stated, that for several years he had been occasionally irritable, and that his only complaint was of pain in the region of the transverse colon. On the 18th, he appeared to lose the power both of speaking and swallowing, having previously said that "he did not know what was coming over him." On the 23d, he was brought to Guy's; he appeared prostrate, unable to stand, but could slowly move his legs and his arms; his countenance was not without intelligence, and he appeared slightly to understand questions; he could not protrude his tongue, which remained almost motionless at the floor of the mouth, and dry on its surface; fluids put into the mouth were retained, and ran out again at the margins, and he could not be induced to attempt to swallow; placing a teaspoon at the back of the mouth excited some action of the muscles; the pupils were active, the right rather larger than the left; the pulse 56, and compressible; the heart's action very feeble; respiration normal, 20 per minute, but the air could scarcely be heard to enter into the chest. The abdominal muscles were exceedingly rigid, but the abdomen not distended. Half a drop of croton oil was placed on the back of the tongue,

and afterwards a nutrient enema was administered. On the 24th, my colleague, Mr. Cooper Forster, passed an œsophageal tube into the stomach without any difficulty, or meeting with any obstruction; some beef tea thickened with arrowroot was in this way administered; the patient afterwards swallowed milk and beef tea, &c., with less and less difficulty, and on the third day began to speak; the bowels were acted on by castor oil, and by enemata; ammonia and calumba, with a small quantity of wine, were given on account of his prostrate condition; his tongue lost its brown and furred condition, and he rapidly improved. His mind, however, was not in a clear state, for as soon as he was able to eat, he had the idea that no other patient in the ward had any food. This case closely resembles those found in asylums, where the patients refuse to eat; but here there appeared to be inability to make the attempt to swallow—a condition which might easily have been mistaken for paralysis of the muscles themselves. I have since learned that after leaving the hospital this patient became violently maniacal.

VI. *Inflammation of the mucous membrane.*—I have not seen any instance in which the ordinary indications of inflammatory action were observed in the œsophagus after death; but this may be due to their disappearance when life has ceased.

In a case of acute inflammation of both small and large intestines of a diphtheritic character, in a woman, æt. 28, admitted under my care into Guy's Hospital, during last year, the mouth was inflamed, and the pharynx and tonsils were covered with a white film, spread upon an injected mucous membrane. This white film consisted of a beautiful torula, interlacing in all directions, constituting the *muguet*; it extended downwards to the commencement of the œsophagus, and some traces of it were found in that canal. In this instance, the symptoms were those of dysenteric diarrhœa, which had continued for several months before her admission into Guy's, and had persisted without any intermission for seven weeks. The disease was attributed to her removal into a damp house. The patient was exceedingly prostrate, and with the diarrhœa had distressing vomiting, retching on attempting to take food, which also produced severe pain. No medicines or injections had any effect in checking diarrhœa, and she died on the third day after admission. It appeared, indeed, that the whole tract of the alimentary canal, from the mouth to the rectum, was inflamed. (*See Dysentery* for a more full account of this case.)

It is probable that in some of the cases of severe gastro-enteritis in children, in whom the mouth as well as the intestine is evidently inflamed, the whole of the alimentary tract is affected, and would present before death a condition quite abnormal. At the close of chronic disease, we find a similar condition of the pharynx, rendering deglutition both painful and difficult; aphthous inflammation of the mouth having extended into this part. In these conditions, I have not seen any remedy followed by such beneficial effects as the chlorate of potash, associated sometimes with borax and honey; but alone it often acts apparently in a most marked manner. This remedy in stomatitis, introduced, I believe, by Hunt, was very extensively used by the late Dr. Golding Bird, and subsequent observers have confirmed the opinion which he entertained. It appears to act partly by its local effect, and also as a saline after its absorption into the system.

VII. *Dysphagia from destruction of the mucous membrane by mechanical or chemical agents.*—Many instances occur, year by year, of infants drinking boiling water; in these cases, the vesication produced is seen in the pharynx and on the epiglottis, and often in inflammation of the larynx and trachea rather than of the Œsophagus, the water being violently ejected before much of it can be swallowed. In several of the inspections after death, it has been found that the lower part of the Œsophagus and stomach presented considerable congestion, showing, apparently, that some of the hot water had reached those parts. With corrosive poisons, the effects must be divided into those which are immediate or primary, and those which are remote or secondary. Generally, the mucous membrane becomes charred and destroyed by the direct chemical action of the poison, as from sulphuric acid, and death takes place in a very short time; but, if the patient recover from the first effect, and the mucous membrane of the Œsophagus be destroyed, an inflammatory product is effused into the submucous cellular tissue, thickening and contraction take place, and, in this manner, an annular constriction of the Œsophagus may arise.

The primary symptoms are severe pain, of a burning character, in the mouth and throat, which extends through the whole track of the Œsophagus. Where corrosive acid has been swallowed, vomiting comes on, often of blood; the patient is unable to swallow, and speaking becomes exceedingly painful; there is sometimes urgent dyspnœa. The tongue is found to be swollen and injected, the mucous membrane on its surface discoloured and destroyed; the throat is in a similar condition. The powerful action of the poison on the larynx may lead to death from apnœa, as in the case of boiling water; but, more generally, it is the action on the Œsophagus or on the stomach that leads to a fatal result. The latter is sometimes extensively injured, and even perforated; its own mucous membrane and coats charred and destroyed, and also the adjoining viscera. The patient becomes anxious and depressed, the pulse compressible and failing, and in many cases the patient dies in a few hours, remaining sensible till near the close of life.

CASE V. *Poisoning by sulphuric acid.*—In an interesting case of poisoning by sulphuric acid, in October, 1855, in which death did not take place until the eleventh day, the mouth and throat were of a whitish colour; at the posterior part of the mouth there was considerable injection of the mucous membrane, and on each side of the posterior pillar of the fauces there were whitish loose patches of membrane. The edge of the epiglottis was found minutely eroded, and the mucous membrane of the Œsophagus was pale, and covered with yellow, membranous flakes. In this case, the prostration and collapse immediately following the reception of the poison were accompanied by vomiting of grumous blood, but, in less than twelve hours, the patient was able to swallow some milk and arrowroot; and on the fourth day appeared to take her food without difficulty. Death took place from the sloughing condition of the mucous membrane of the stomach, combined with the inflammation of the duodenum, and, in fact, with that of the whole tract of the intestine. The ability to swallow, in this case, is seen to have been restored in a very short time, considering the fearful injuries which resulted to the whole of the mucous membrane. (See more full account of the state of the stomach in our remarks on that viscus.)

The following case illustrates the *secondary* effect of a corrosive poison in the thickening of the whole of the œsophagus and obstructed pylorus, which led to a fatal termination, in a man who died three months after having taken an ounce of nitric acid.

CASE VI. *Poisoning by nitric acid.*—James T—, æt. 24, was admitted under Dr. Barlow's care, in March, 1852, in a state of extreme emaciation; he vomited, with some pain, all the food which he had swallowed; the abdomen sometimes became extremely distended; the bowels had only been opened twice during the two months preceding his admission; the tongue was injected. He lived eighteen days after admission, but his symptoms gradually increased from the time of taking the acid, which he had done by mistake, not discovering the accident until he had completely swallowed it. On inspection, the epiglottis appeared healthy; the mucous membrane of the whole of the œsophagus was thickened and readily separated; the submucous tissue and all the coats of the œsophagus were also thickened; the stomach was enormously distended, reaching to the anterior superior spinous process of the pubes; the pylorus was obstructed, thickened, and contracted; the lungs and heart were healthy; the liver was small, deep in colour, and the gall-bladder contained about 3jss of dark-coloured bile; no other viscus was diseased.

CASE VII. *Poisoning by nitric acid. Recovery.*—A young man, about 22 years of age, a hawker, whilst at his tea, on March 13th, took by mistake for vinegar a mouthful of nitric acid, and swallowed it. A severe burning pain in the mouth was at once produced, which extended to the epigastrium. A druggist prescribed an emetic; vomiting then came on, and he brought up about half a cup full of blood. The vomiting continued through the night, and on the following day he was brought to Guy's; the countenance was anxious; the mouth and tongue were stained of a yellow colour, the tongue enlarged and injected; the throat was intensely injected, and presented irregular shreds of whitish membrane upon it. He was unable to swallow, and speaking produced cough and much distress in the throat. He stated that he suffered pain in the throat and epigastrium when retching came on, but not when quiet. He was a muscular man, and in health at the time of the accident. Milk and eggs were given, and magnesia mixture of opium $\mathfrak{m}\mathfrak{v}$. every four hours. 17th, he was sitting up, taking food; he stated that he felt much more comfortable: had slight pain in the throat when he swallowed, but no other discomfort. The throat still very much injected, and mucous membrane separating. In a few days he left the hospital, and considered himself well. The immediate effects were in a few days relieved and the dysphagia disappeared; but after such severe injury to the œsophagus we should look with great caution to the result; thickening of the coats and constriction may, and perhaps will, follow: the acid probably reached the stomach, for we had pain produced at the scrobiculus cordis on vomiting; but there was no evidence that serious injury had been done to that viscus.

VIII. *Organic obstruction of the œsophagus.*—Cases of this kind may be divided into those arising from—1, annular constriction; 2, ulceration, sometimes communicating with the trachea; 3, cancer; and 4, pressure from aneurismal or other tumours. The history and close attention to the symptoms will alone enable us to distinguish these cases from one another. In some of these it is to be hoped that remedial means may be used which have hitherto not been attempted; in others, it is evident that nothing can be done for cure, but at the same time pain may often be averted, and some of the symptoms mitigated.

Annular constriction of the œsophagus consists in the effusion of fibrinous material into the submucous cellular tissue; this tissue contracts, and becomes exceedingly dense, forming a firm constricting band, while the tube above dilates, and the obstruction increas-

ing, at last passage of food becomes impossible. A beautiful specimen of this form of constriction is shown in the Preparation No. 1789, in the Museum of Guy's. Many of these cases are probably the result of corrosive poisons, or arise from injury to the mucous membrane, or from inflammation set up by adjoining disease. No. 1789⁵⁰, in the Guy's Museum, shows the Œsophagus of a lad, in which about two inches above the diaphragm the parietes of this tube are thickened, the mucous membrane contracted, and apparently cicatrized for the space of an inch and a half. There is an absorbent gland in the neighbourhood of the stricture, adherent to the walls of the canal. The boy had had difficulty of swallowing from infancy, and a bougie had been passed occasionally. Inflammation about the gland had, perhaps, led to this thickening of the canal.

An exceedingly interesting case, bearing some relation to the preparation just mentioned, was recorded by Dr. Ogier Ward, in the *Transactions of the Pathological Society* for the year 1850. A boy, ten years of age, who died from meningitis, suffered from difficulty of deglutition a month before his death, which disappeared, however, before his last illness. On inspection, a longitudinal ulcer was found at the bifurcation of the trachea, communicating with a suppurating bronchial gland.

In recorded cases of annular stricture, the obstruction has gradually increased in severity; and unless we had a history of poison having been taken, or the discharge of pus from abscess, I know of no direct symptom by which they can be distinguished from those of so-called cancerous disease. The passage of a bougie may reveal to us the presence of obstruction, without indicating its true character, unless mucus from the bougie presents us with cancerous products.

Ulceration.—In the Museum at Guy's, there are several specimens showing ulceration of the Œsophagus, of a non-cancerous character, extending into the trachea, and there is some obscurity as to the correct pathology of them; difficulty of deglutition was the most prominent symptom during life; in some this had been gradual, in others, deglutition had suddenly become impossible; the pain was situated at the sternum or between the shoulders, and attempts at swallowing were followed by urgent dyspnœa, and the food was forcibly ejected through the nares. The patients became emaciated, and life was prolonged for a short time by the use of nutrient enemata. On inspection after death, the only disease found has been perforation of the Œsophagus opening into the trachea; the openings extending over one or two inches, and two or three in number, the edges smooth, without any thickening, and in several cases the opening into the trachea being the smaller. The examination of these cases does not give any evidence of cancerous disease; the early symptoms appear to arise from the Œsophagus, the difficulty in respiration following that of deglutition; nor do we find other evidence of disease either in the larynx or lungs. These facts appear

to show, that the disease has not commenced either in the mucous membrane of the trachea or in disease of its cartilages, and we are led to suppose, either that an abscess has formed between the œsophagus and trachea, and led to fistulous openings into those canals, or that ulceration has taken place in the œsophagus, and gradually extended in depth through the adjoining structures. It sometimes, however, happens, that ulceration extending into the œsophagus arises from disease of the tracheal cartilages, and the following remarkable specimen is of that kind.

CASE VIII. Diseased cartilages of trachea. Ulceration of œsophagus.—A carrier, aged 42, at Hampton, was under the care of Mr. Holleston and Mr. Jepson, in 1853. He had had crowing respiration, abundant expectoration, but no very urgent dyspnoea, or difficulty in swallowing. He gradually sank. Six months before his death, he expectorated a portion of ossified tracheal cartilage (Preparation 1711⁸⁷), and six weeks later a second portion. On inspection, at the commencement of the œsophagus, immediately beneath the cricoid cartilage, was a vertical opening, half an inch in length, extending into the trachea, the edges smooth and rounded; there were three other communications, resembling fissures, being merely separated by shreds of mucous membrane. (See Preparation 1711⁸⁷.) The cartilages of the trachea were ossified, and there was some ulceration of the mucous membrane of the larynx at the cricoid cartilage. The inferior lobe of the right lung was consolidated, but no other part of the body was diseased; and there was no trace of cancerous or strumous disease.

Dysphagia was almost absent, as far as can be learned, in this case; and the symptoms were those indicative of disease commencing in the larynx, thus differing remarkably from the cases presently to be recorded, where dysphagia was the most prominent complaint of the patient. It is probable that their pathology is also different. No history of syphilis is given, but the expectoration of a portion of diseased cartilage, six months before death, indicated the character of the disease.

CASE IX. Ulceration of the œsophagus. Perforation of trachea.—A married woman, æt. 24, who had never had robust health, about a year previous to her admission under Dr. Barlow's care, had enlarged glands about the neck, which diminished under the use of iodine; and six months afterwards she began to experience difficulty in swallowing, pain in the chest, uneasiness in the throat, and some shortness of breath. These symptoms increased in severity till admission, but a short time previously had suddenly become very much aggravated. She was much emaciated; no swelling could be found about the neck, or disease of the chest. She experienced the greatest difficulty in swallowing fluids, and food was at once forcibly ejected. Mr. Hilton passed an œsophageal tube, and found that when the patient breathed, air passed from it, indicating a communication with the trachea. She was fed for six weeks entirely by injections. On inspection, the trachea and œsophagus were found extensively diseased from the cricoid cartilage, nearly as far as the bifurcation of the former, and the two communicated by three openings. The anterior wall of the œsophagus was destroyed, with the exception of two slips of muscle, which still remained; and at this part there was an oval ulcerated opening passing into the trachea; below this was a small portion of the calibre of the œsophagus remaining, but considerably contracted; below this the œsophagus was again wanting, and two more openings passed into the trachea. At this part, the posterior wall of the œsophagus was also destroyed, and the body of the last cervical vertebra exposed. The cellular tissue in front of the trachea, with the remains of the œsophagus, and the muscles of the neck, bounded the space involved by the ulceration; the openings into the trachea were oval, transverse, and perfectly smooth; not the least thickening or heterologous deposit could be detected by careful examination, aided by the microscope; the surfaces were covered with mucus. In the ovary, and in an adhesion on the surface of the liver, were slight strumous

granular deposits; but no other viscus was diseased, nor was there any evidence of cancerous disease. There was slight difficulty in breathing, and Mr. Hilton performed tracheotomy, but without any permanent advantage to the patient. (See Preparation 1714¹⁰, and Drawing 246²⁴.) The stomach was small, contracted, and almost perpendicular; it contained a small quantity of bilious-looking alkaline mucus. The large intestine was dilated, and contained healthy feces; the cæcum contained some acid mucus; the rectum presented several small ulcers, and was covered by a firmly adherent diphtheritic deposit.

The following case occurred in Guy's, in the year 1840. There is no history of the symptoms on record; but the patient was a man aged 33 years, and he died four days after admission. The post-mortem inspection was as follows:—

The body was exceedingly emaciated. Near the middle of the Œsophagus, the mucous membrane, for about two inches, was of a very red colour, and irregular from ulceration; the canal was much contracted, and would have scarcely admitted the end of the little finger. Below the stricture, the Œsophagus was much dilated, and an abscess had formed behind it, containing four ounces of dark fluid of a sour odour; there was a small sinus leading to the abscess; the mucous membrane, both above and below the diseased part, was quite healthy; there was no evidence of cancer in the affected part; nor was any other organ diseased, except that the kidneys were found to be granular. (See Preparation 1789⁷⁵.) It was supposed that a corrosive poison must have been taken, but of this there was no proof or evidence.

An exceedingly interesting case will be found recorded by Mr. W. Trotter, in the *Pathological Transactions* for 1852; it occurred in St. Mary's Hospital. A young woman, æt. 25, had ulceration of the Œsophagus, which extended into the pericardium, and led to sudden syncope and death. For three months she had had nausea, dysphagia, occasional vomiting, and pain at the top of the sternum, and at the epigastrium. Solids were swallowed with much difficulty. There was found, after death, simple ulceration without contraction; the ulcer had extended from the bifurcation of the trachea nearly to the diaphragm, and had perforated the pericardium. No other organ was diseased.

These last two cases were instances of simple ulceration below the bifurcation of the trachea; the other cases were above this part. They appear very similar in character, the modification in the symptoms arising from the difference of the adjoining structures which were implicated.

There are many instances of persons complaining of pain at the upper part of the sternum on swallowing, in whom no trace of pressure or aneurism can be found; and I have seen this symptom disappear under the use of tonics, sometimes with iodide of potassium. The idea of cancerous growth has been precluded; and it has been therefore a question whether some abrasion of the mucous membrane, or slight ulceration, such as we sometimes find in the pharynx, had not led to this complaint.

It is exceedingly difficult, during life, to decide as to the character of these fatal cases of ulceration just mentioned; the emaciation, dysphagia, and distress, being the same as in cancerous disease. In all the cases which have come within my notice, the age of the pa-

tient has been very much less than in most of those of cancer. This alone, however, is not sufficient to enable us to decide with certainty as to the character of the disease.

The treatment is exceedingly unsatisfactory; the spasmodic contraction of the ulcerated part prevents the passage of œsophageal tubes; no food can be swallowed, and the administration of nutrient enemata prolongs life only for a few days or weeks. It is painful to find, after death, that simple ulceration of the œsophagus, or a fistulous communication with the trachea, is the only existing disease; and that if food could have been introduced beyond this point, life might have been prolonged. The operation of œsophagotomy is a very difficult one, and in many of these cases, if performed, would be quite ineffective, because the disease is often situated at the root of the lung, or behind the first bone of the sternum; in either case, the operation could not be performed below the seat of stricture. It having been found that the peritoneum may be divided without fatal result, and without the terrible effect seen to follow from ruptured viscera, the propriety of forming a gastric fistula in some of these cases is worthy of very serious consideration. It appears certainly warrantable, as it would afford a chance of life to those who now have only a prospect of certain death. In the human subject, several cases of gastric fistulæ accidentally produced have been recorded, and the experimenters on animals purposely make such openings, under the influence of chloroform, without the production of severe peritonitis.

Cancerous disease of the œsophagus and pharynx.—The symptoms were very similar to those mentioned with ulceration of the œsophagus; the patients are generally beyond the middle period of life; difficulty in swallowing is the first and most prominent symptom, gradually increasing in severity; but in some instances does not become extreme till the extension of the cancerous ulceration to the lungs, or other structures, leads to symptoms which almost mask the original disease (as at Case X.). There is pain at the sternum, in the back, sometimes in the upper part of the throat; dyspnœa comes on, where the trachea or bronchi become involved; the dysphagia and emaciation increase, and after six or seven months the disease proves fatal. Sometimes death occurs by inanition, the dysphagia having become complete; more frequently by the extension of the disease to the bronchi, and setting up sloughing pneumonia, or by the pneumogastric nerves becoming destroyed; or, finally, by the ulceration extending into the trachea, and thus leading to fatal laryngitis. Loss of voice becomes a well-marked symptom only in those cases where the disease is situated at the base of the pharynx, and extending into the larynx at that part. The part of the œsophagus which is most fixed by its connection with other organs is at the root of the lungs, and it is there that cancerous disease is most frequently found, and not at the termination, although it extends downwards, so as in some cases to reach the diaphragm. This, possibly, is on account of

its canal in that situation being less yielding, and irritation being the more readily set up.

Hæmatemesis is sometimes a symptom of cancer of the œsophagus. Dr. Bristowe exhibited, at the Pathological Society, a case of ulceration of the œsophagus extending into enlarged veins, and leading to fatal hemorrhage; it does, however, occasionally occur, that in cancerous ulceration there is repeated and severe hemorrhage, which may be the precursor of death. In cancerous obstruction we do not generally find much distension of the canal above the seat of disease; the reason of this appears to be, that the food is quickly regurgitated. In annular obstruction of a non-cancerous character, as after poisons, the canal becomes more enlarged and dilated, the disease is of a more chronic character, and there is less sensibility of the surface.

In nearly all the cases which I have examined, the disease has been of that form which is described as epithelial cancer. The growth presenting modifications of epithelial scales, in the various instances observed, some have been found with very large nuclei; in others, large nuclei were seen thickly set together; in some, brood cells were observed. In Case XIV., presently to be mentioned, some papillæ were observed on the surface of the growth, covered by healthy squamous epithelium, and containing a capillary filled with blood. An adjoining one presented a similar general appearance, but the capillary was filled with granular cells, somewhat resembling white corpuscles of blood. A third papilla closely resembled some of the brood cells; its central portion contained nuclei and nucleated cells, and it was surrounded by flattened scales or cells resembling epithelium. It appears probable, that in some cases degeneration of papillæ may lead to the formation of these clusters of cells, and not the endogenous mode of growth, which is the method usually received. The disease generally extends by mere contiguity of structure, involving (where any other part is affected, which is not frequently the case) the adjoining bronchial glands, the roots of the lungs encroaching upon the bronchi, and setting up pneumonia. I have several times found the pneumogastric nerves destroyed on one or both sides; and it appears that this, in some cases, tends to set up congestion of the lungs, followed by pneumonia, since we find such pneumonia resulting without actual extension into the lung passages.

Case XII. presents a marked instance of the disease being found in other structures besides the primary organ affected, cancerous elements being discovered in the liver, pancreas, stomach, suprarenal capsules, &c. In the liver, lungs, and pancreas, cells of an epithelial character, and precisely similar to those found in the ulcerated œsophagus, were observed. In this case, also, there was chronic pneumonia existing, not alone, but associated with deposit of small cancerous tubercles. In some cases, a doubt might be felt as to the cancerous character of these bodies, but an instance of this

kind removes, I think, such doubt altogether. The vomiting and pain in this case were exceedingly severe, more so than usual, but were explained by the condition of the pneumogastric nerve, which was exposed at the base of the ulcer; several of its branches truncated, and others passing across the surface perfectly exposed. Cancerous infiltration extended around the right semilunar ganglion, and encroached upon its component tissues. All the gland-structures in the abdomen were more or less atrophied; but whether this was due to the diseased condition of the ganglion, or merely dependent on the exhausting fatal disease, and advanced life, is doubtful. Mr. H. Gray records a case of villous and epithelial cancer at the termination of the pharynx, in the *Pathological Transactions* of 1855. Scirrhus is sometimes observed, and at the termination of the œsophagus sometimes colloid cancer.

In Case XII. the disease was perfectly local, but its structure was more closely resembling a medullary cancerous tumour than epithelial.

Sometimes the cancerous ulceration extends through the diaphragm after destroying the œsophagus; such a case occurred under my care in Guy's, during 1856, see No. XII. The œsophageal opening into the stomach remained, but a large sloughing cavity was formed, bounded by the pancreas, spleen, and diaphragm, and communicating with the posterior mediastinum by an opening in the diaphragm. Immediately behind the pericardium was a large sloughing cavity, presenting above the truncated œsophagus and pneumogastric nerves, and terminating below as just described. It was surprising that the patient could have lived as long as he did, but only three days before death he had come from Broadstairs, and was not at all aware of his perilous condition.

The character of the disease of the lung deserves our special attention.

In only one out of 13 cases did death appear to result from inanition, and then not altogether free from disease of the lungs.

In 7 there was pneumonia.

- | | | |
|-----|---|--|
| " 2 | " | gangrene of the lung. |
| " 1 | " | acute bronchitis and laryngitis. |
| " 1 | " | pleurisy. |
| " 1 | " | cancer of lung, with great congestion. |
| " 1 | " | death from inanition. |

As to the causes of the pneumonia—1st. The pressure or destruction of the pneumogastric was followed by acute pneumonia on the same side, or by gangrene. 2d. The pneumonia appeared to result from the extension of disease into the bronchi setting up, if not pneumonia, acute bronchitis or laryngitis. 3d. The sloughing of the cancer was followed by septic changes in the blood, and consequent inflammation of the lungs. 4th. Cancerous growth or tubercles in the lung acted as the cause of congestion or inflammation. 5th. Strumous disease of the lung already existed.

The chronic affection of the lung is interesting in its relation to cancer; in Case XIII. the tubercles were of a cancerous character, and set up chronic pneumonia; in Case XIX., in which cancer of the throat existed, the lung was affected with ordinary strumous disease, and the most careful examination could not detect any trace of carcinomatous product in the lung; it is probable, that the disease in the lung existed prior to the development of the cancer and was scarcely concerned in the cause of death.

In Case XXI. the vomica at the apex of the lung was evidently of a chronic character; the dense iron-gray lung tissue around it, and calcareous degeneration, indicated that it had existed for a considerable period.

In Case XXII. there was also a vomica at the apex, and the history indicated that cough had existed long prior to the dysphagia. There were evident signs of phthisis in the flattened apex, loud bronchial and amphoric respiration and bronchophony; had there not been present the cancer of the Œsophagus, it would have been considered as an ordinary instance of pneumonic phthisis. In the exhaustion which was consequent on the obstruction of the Œsophagus, the cough continued troublesome, and a few days before death acute disease of the lung was set up, arising, perhaps, at the time the cancerous growth began to disintegrate, or from atmospheric changes.

Of the 13 cases here recorded, 8 were men, and their average age was 56; 5 were women, and their average age 43: in 2 of the latter the pharynx rather than the Œsophagus was affected; the statistics from such a small number are, however, of comparatively little value.

Among these instances the longest period which elapsed between the commencement of dysphagia and death was fourteen months, several were three to seven months, and in two still less.

The diagnosis is sometimes obscure; this has been mentioned in reference to annular stricture, and in perforating ulcer into the trachea. Where we find chronic disease of the lung with dysphagia, the diagnosis is much increased in difficulty, because in ordinary phthisis, the dysphagia is sometimes exceedingly severe. This remark especially applies to the bronchitic phthisis of advanced life, as in Case XIII., where the patient was sixty-nine years of age.

The prognosis in all these cases is very unfavourable; but in some, after the avoidance of irritating and solid food, or using nutrient enemata for several days, the dysphagia becomes diminished in a marked degree, and the patient is able to take food without discomfort. Two cases in Guy's, admitted with symptoms of cancerous disease of the Œsophagus, men nearly sixty years of age, with nearly complete dysphagia, were so much relieved as to leave the hospital; when, however, we find the disease extending into the respiratory passages, or into the large vessels, we may fear a speedy termination.

These remarks suggest to us the proper mode of treatment; the

avoidance of solid food for a time, or rather the attempt to swallow it, which produces distressing spasm of the œsophagus; and if the swallowing fluids be very difficult, to use nutrient injections for a short time.

Liquor potassæ and iodide of potassium, with vegetable infusions, may afterwards be taken with relief in the earlier stages, or the nitric and hydrochloric acids, with morphia or opium. In advanced cases, where there is extensive cancerous ulceration and excessive irritability from exposure of the branches of the pneumogastric, external remedies are of no avail, but nutrient injections are the only means of prolonging life.

CASES OF CANCER OF ŒSOPHAGUS AND PHARYNX, SHOWING THEIR COMPLICATIONS AND TERMINATIONS.

- CASE X.—James R—, æt. 45. Sloughing pneumonia. Pneumogastric involved.
- “ XI.—John R—, æt. 50. Communication with trachea. Pneumonia. Diseased kidneys.
- “ XII.—George E—, æt. 73. Gangrene of lung. Cancer of cervical gland and thyroid body.
- “ XIII.—Jane B—, æt. 63. Cancer of stomach, liver, pancreas. Chronic pneumonia with cancer. Destruction of pneumogastric. Granular kidneys. Diseased semilunar ganglion.
- “ XIV.—Charlotte W—, æt. 32. Disease at termination of pharynx. Laryngitis.
- “ XV.—Catherine S—, æt. 38. Communication with trachea. Cancer of lung and kidney.
- “ XVI.—Mrs. B—, æt. 54. Death from inanition.
- “ XVII.—George D—, æt. 45. Gangrene of the lung.
- “ XVIII.—John H—, æt. 66. Pleurisy and diseased kidneys.
- “ XIX.—Martha M—, æt. 31. Cancer of palate, with strumous pneumonia.
- “ XX.—William E—, æt. 50. Left pneumogastric involved. Pneumonia.
- “ XXI.—George W—, æt. 50. Pneumogastric destroyed. Pneumonia.
- “ XXII.—William G—, æt. 69. Pneumonia, acute and chronic.

CASE X. *Cancer of the œsophagus. Sloughing pneumonia, the pneumogastric involved.*
—James R—, æt. 45, admitted into Guy's, November 21, 1854, under Dr. Gull's care. He died November 30. He was a married man, a labourer, but had not been temperate in his habits. Nine weeks before admission, he was unable to swallow his food with comfort, and he suffered from severe pain at the lower part of the sternum. After that time he lost much flesh, and cough, with pain in his side, came on. He vomited occasionally, and had burning pain at the sternum, and there was a sense of nausea when he began to eat. On admission, he had a cachectic, pale, and wretched appearance; he was troubled with cough, and the expectorated matters were exceedingly offensive. At the left apex the respiration was coarse, but at the base of the right lung there were signs of consolidation; the voice, both at the base and apices,

was increased in resonance. Cinchona and morphia were administered, but the patient sank in a few days. The severe pulmonary symptoms in this case completely masked the original disease of the œsophagus; for a short time it was believed that it was a case of pneumonia with old disease of the lung, and that the burning pain at the sternum, and vomiting, were consequent on intemperate habits. At the commencement of the œsophagus was extensive ulceration, four or five inches in length, irregularly tubercular on its surface, and several tubercles were situated in the mucous membrane, both above and below the ulceration. The disease extended as low as the root of the lung, but the lungs themselves and the pleura were free from cancerous disease. The tissue external to the œsophagus was extensively infiltrated, especially on the right side, and some of the bronchial glands affected; the right pneumogastric nerve extended through it. The lower part of the pneumogastric appeared wasted, but it could not be traced satisfactorily throughout, having been divided in the inspection. The right lung, at its lower lobe, was of a greenish colour, and of a faint gangrenous odour, infiltrated with dirty serum, and imperfectly consolidated. The bronchi were intensely congested. The remaining parts of the lungs and larynx were healthy. The heart, stomach, liver, and intestines, &c., were healthy; and no cancerous disease could be detected in any other part. As to the character of the growth, it had the general and microscopical appearance of epithelial cancer. There was no direct communication between any of the large bronchi and the ulceration of the œsophagus; and it appeared probable that the right pneumogastric, becoming involved in the disease, had predisposed to the pneumonic inflammation on the same side. The disease proved fatal at an earlier period than usually observed, only about ten weeks from the recorded commencement of difficulty in swallowing. The diagnosis was rendered obscure by the extreme severity of the pulmonary symptoms.

CASE XI. *Epithelial cancer of the œsophagus communicating with the trachea. Pneumonia. Granular kidneys.*—John R—, æt. 50, admitted into Guy's, under Mr. Hilton's care, March, 1856, and died the following day. No history, except that he had felt ill for three months, could be obtained. On admission he was suffering urgent dyspnoea, there was great congestion of the face, and he was apparently dying from apnoea. Tracheotomy was performed by Mr. Callaway, but the patient died in a few hours. The body was spare but muscular. The epiglottis was pale, and its mucous membrane slightly œdematous; near the arytenoid cartilage was a small circular ulcer. At the commencement of the trachea was the artificial opening, and two inches and a quarter below it, and an inch above the bifurcation, was a vertical opening about half an inch in length, extending into the œsophagus; the membrane around was of a dull gray colour; the mucous membrane of the trachea and bronchi were much congested. Nearly three inches above the commencement of the œsophagus was an irregular ulcer, three inches in length, with raised, irregular edges, and ragged surface; at its base was the opening into the trachea; the remaining part of the canal was healthy. (Preparation 1793³⁴.) Neither bronchial nor cervical glands were affected. The lower lobe of the right lung was in a state of red hepatization, becoming gray; and in the left lung was a lobule broken down from acute inflammation. On the right pleura there was effusion of lymph. The kidney was small, granular, contracted, and containing cysts. The other viscera healthy. As in the last case, there was no affection of the glands; the patient was one in whom the constitution was impaired by chronic disease of the kidneys.

CASE XII. *Cancer of the œsophagus, of cervical glands, and of thyroid body. Gangrene of the lung.*—George E—, æt. 73, admitted into Guy's, November, 1853, and died February, 1854. He was a table-cover maker, and in his early life had been intemperate; he was extremely emaciated. Eight months before his admission he received a severe fall, from which he never recovered; and two months later he began to suffer great pain in eating solids, and had occasional attacks of vomiting. These became more and more frequent, and latterly almost incessant. He could not take solid food, and complained of intense pain at the cardiac extremity of the stomach. Mr. Callaway passed an œsophageal bougie, but without meeting with any obstruction in its passage. His vomiting diminished soon after admission. The bowels became constipated, but he continued to suffer severe pain. He became gradually weaker, and on February 5th vomited a considerable quantity of dark-coloured fluid; he died on the 13th. Inspection was made twenty hours after death. In the brain there was

considerable subarachnoid effusion, and disease of the arteries. At the central part of the œsophagus, opposite the root of the lung, was a large irregular ulcer, two inches in length, and involving the whole of the tube; at the upper part was a raised, circular margin, and a semi-detached ulcer of similar character, about half an inch in diameter. At the root of the right lung was a mass of sloughing tissue, infiltrated with sanious fluid, and the adjoining lung was consolidated. At the base of the left lung was a circumscribed mass of pulmonary apoplexy and lobular pneumonia, and a vomica containing thin purulent fluid. The cervical glands and the thyroid body were infiltrated with carcinomatous product, white, and resembling medullary cancer. There was fatty and fibroid degeneration of the heart. In the peritoneum were old adhesions, and a granular condition of the surface of the liver. The kidneys were also granular and contracted.

CASE XIII. *Epithelial cancer of œsophagus. Pancreas. Liver. Stomach. The pneumogastric involved. Granular kidneys. Chronic pleuro-pneumonia, with cancer. Fibrous tumour in uterus. Cancer of supra-renal capsules and semilunar ganglion.*—Jane B—, æt. 63, admitted Aug. 23, 1855, under Dr. Addison's care. She was a married woman, who had resided at Snow Fields, and had had three children. She was of light complexion; a thin anæmiated woman, and had suffered for nine months; the first symptoms being pain after swallowing; no tumour could then be felt, but cancerous disease was suspected. After admission, a firm mass, at the scrobiculus cordis, about the size of a hen's egg, could be felt; it was well defined, sensitive on pressure, and tolerably distinct pulsations could be perceived; the food returned at once, or rather was at once regurgitated. The tongue was clean, and the bowels constipated. She complained much of flatulence, and at night regurgitated water into the mouth. At first, vomiting several hours after food was the principal symptom. Soon after admission the food was at once returned; sometimes, however, it was retained for several days. She took creasote three times a day, and opium at night, with considerable relief for a short time. On December 8th, I examined some of the water ejected from the mouth, but could not discover any cancer cells or sarcina. She varied much, sometimes the stomach being excessively irritable, and rejecting everything, at other times she was able to take food. On December 19, tumour had not increased in size. She became more and more prostrate, and during the last month of her life suffered severely. She died March 26. *On inspection*, the body was much emaciated. The brain was very much atrophied; the convolutions separate. There was subarachnoid effusion, and an increase of fluid in the ventricles themselves. The septum in the ventricles was atrophied and almost destroyed. *Chest.*—At the commencement of the œsophagus, the mucous membrane began to present an irregular granular appearance, with one or two whitish tubercles about the size of pins' heads; passing downwards, these became more numerous, till nearly opposite the root of the lung a raised ulcerated margin was observed, and this was in some parts sloughy; beneath this, the walls of the œsophagus were completely destroyed for about three inches, and the side of the right lung was in a sloughy condition; posteriorly, the pericardium bounded this sloughy mass, and there was an opening about the size of a sixpence extending through that membrane, opposite the left auricle, which was slightly affected with granular cancerous growth at that part. Nearer to the stomach, the walls of the œsophagus were again observed intact, but infiltrated with cancerous product, and nearly in a sloughy condition. At the floor of the cancerous ulcer were several branches of the pneumogastric exposed; the right one could be traced down to the ulcer, and several branches were completely truncated; another one passed obliquely across the ulcer to the opposite side, to join the left nerve. On the left side, a branch was also observed to be truncated, and a large one ran for about two inches exposed in the sloughy tissue. The branches to the lungs were entire above the cancerous growth. The ulcer in the œsophagus presented the elements of epithelial cancer. At the left lung were pleural adhesions; and the apex presented several white tubercles, at first supposed to be strumous, but found to consist of cancerous elements; the surrounding lung and the whole apex were of an iron-gray colour, from chronic pneumonia. The microscope showed large nucleated cells, resembling those of epithelial cancer observed in other parts, smaller nucleated cells, a great number of granules, pigment, and some elongated fibre cells; other tubercles of a similar kind were observed in the lung, a few near the root, others at the periphery; the right lung was more free from disease. The larynx, trachea and bronchi were healthy. The heart was small, destitute of fat, and atrophied. *Abdomen.*—In the stomach,

near the œsophageal opening, was a raised tubercular growth about half an inch in diameter; it was ulcerated at its apex; its section showed that it principally involved the mucous membrane, but was extending into the muscular coat beneath. Some large nucleated cells were observed in the raised edges of the growth, and degenerated gastric follicles, some much enlarged, and containing highly refracting particles, others nuclei. The rest of the mucous membrane and the pylorus were healthy. The head of the pancreas formed the hard mass which had been felt at the *scrobiculus cordis*; it consisted of hard, granular, whitish tissue, soft and breaking down in the centre, with some dense, firm, semi-transparent bands passed through it. On examination, it presented large epithelial cancer cells, elongated cells forming fibres, and some undergoing degeneration. The adjoining lymphatic glands were infiltrated and adherent, the lesser curvature of the stomach was also adherent; the rest of the pancreas was normal. On the adjoining surface of the liver was an irregular tubercle, evidently produced by contact, and in the substance were several other small tubercles, but consisting of the same epithelial elements. The liver was small; its cell structure healthy. The gall-bladder was moderately distended, so also some of the bile ducts. On the right side, the cancerous infiltration extended to the right semi-lunar ganglion, which appeared to be infiltrated with cancerous product; cancerous cells being observed among the ganglionic cells. There were cancerous tubercles in both suprarenal capsules, but only involving a small portion of the organ. The duodenum, ileum, and colon were healthy, but the intestines were atrophied, thin, and wasted. The kidneys were granular, very small, and only four ounces in weight. The spleen was small and there was a dense white patch on its surface. The cavity of the uterus was occupied by two soft polypi, and a large dense tumour, about three inches in diameter, involved its walls; it was dense and fibrous at its periphery, but did not present any trace of cancerous elements; its centre was tough, gray, and semi-calcareous; the ovaries atrophied. (*See Preparation 1799*³³.) In this case the diagnosis was obscure (on account of the food being sometimes retained for several hours), indicating disease of the stomach rather than of the œsophagus. A tumour could also be felt at the *scrobiculus cordis*; the disease of the œsophagus was, however, too extensive to produce obstruction, the walls of the lower part of the canal being entirely destroyed; so also the pneumogastric; she suffered much and severe pain.

CASE XIV. *Epithelial cancerous tumour in pharynx, closing entrance into œsophagus, and in the neck. Effusion of false membrane in the larynx and trachea. Acute bronchitis.*—Charlotte W—, æt. 32, admitted under Mr. Cock's care, February, 1856, and died March 6th. She was a married woman, short, anæmiated, and somewhat emaciated. She had been out of health for a year, but for three months experienced very great difficulty in swallowing, and for several days it had become almost impossible to swallow anything except a small quantity of fluid; and the attempt now led to regurgitation through the nares. The effort of swallowing did not produce urgent dyspnoea. Respiration on admission was easy and normal, but there was slight hoarseness. On examining the chest, the respiration was found to be less free at the right apex. At the left side of the neck, below the angle of the jaw, was a prominent round tumour about one inch in diameter; it could be partially separated from the structures beneath. Mr. Cock attempted to pass a small bougie, but it was found to be quite impossible. The tumour in the throat could not be seen or felt. A short time before death very urgent dyspnoea came on, and she died from apnoea. At the lower part of the pharynx, attached to the cricoid and arytenoid cartilages, or rather the mucous membrane opposed to them, were four round tumours closely placed together, or rather one lobulated growth, extending as high as the upper margin of the epiglottis, and quite excluding the opening into the œsophagus. After removal, a probe could only be inserted by slowly passing it round the growth. The surface of the growth was gray, not ulcerated; its section pale, and nearer the surface presented regular red lines: vessels full of blood. The soft palate also was considerably thickened. The inner surface of the epiglottis, of the larynx, and of the trachea, was covered by a layer of false membrane easily separable; the bronchi, especially the larger ones, were also full of tenacious mucus. The tumour in the neck was soft, and of a pale yellow colour. The lungs did not collapse, but appeared quite healthy. Heart, liver, intestines, spleen, and kidneys, were healthy; so also the uterus and ovaries. Bronchial and abdominal glands normal. On examining the growth from the pharynx, its base was found to consist of large cancer cells, containing a large granular nucleus, and closely arranged together. The growth in the neck had a simi-

lar stricture. The surface was not ulcerated, but presented epithelium, normal in some parts. The appearance of the papillæ has been previously referred to; some were in a normal condition; in others, the central capillary was obstructed, and some were still more degenerated, closely resembling brood cells. (Prep. 1785⁷⁶.)

CASE XV. *Carcinoma of œsophagus, communicating with the trachea. Cancer of lung and kidney.*—Catherine S—, æt. 38, admitted under Dr. Barlow's care, April 9, 1856, and died April 17. She had been a servant in a family for twenty years, and began to suffer from her present illness about six months before her death. On admission, she was in a state of great emaciation, the dysphagia was extreme. Swallowing of food was at once followed by its regurgitation through the nose and mouth. The circulation was exceedingly feeble, and Dr. Barlow feared lest gangrene in the extremities might come on. She appeared to die from exhaustion. The body was much emaciated. In the neck, on the left side, was an enlarged cervical gland, about one inch in diameter, firmly adherent to the œsophagus and trachea; a smaller gland was situated on the right side; the former could be felt before the division of the skin. The lungs did not collapse freely. On dividing the trachea, an opening was found immediately above the division into bronchi, somewhat oval in form, slightly pointed above and below, and about one inch and a half long, communicating with the œsophagus; the edges of this opening were thickened and slightly irregular. The corresponding part of the œsophagus presented a nodular surface about three inches in length, and involving the whole circumference of the tube. The edges were raised and irregular, and the surface ulcerating. There was slight vascular turgescence. Several cervical glands were adherent to the œsophagus, were of a firm white colour, and infiltrated with cancerous deposit, and in the centre of a yellow colour. Other glands at the root of the lung were not all infiltrated. The bronchi were intensely congested, and contained much dirty grumous fluid. The lower lobes of the lungs were much congested, and the right contained beneath the pleura a small mass about half an inch long and a quarter of an inch broad, composed of yellowish-white cancerous substance. The left renal vein was filled with clot, which was adherent, and the walls were considerably thickened. In this kidney were several cysts, and a minute tubercle composed of elements resembling the other cancerous structures. On examination of the œsophageal ulcer, a small quantity of juice from the section presented numerous nuclei; and in the section, some epithelial plates, cells with large nuclei, and caudate cells. It also presented some elongated nuclei and fibres, some of which had a curved arrangement inclosing nuclei and brood cells. The raised edges of the ulcer were composed of masses of these nuclei and cells, with some intervening elongated nuclei and fibres; and on the addition of acetic acid, some elastic coiled fibres were observed. The growth in the lung presented similar aggregation of nuclei. The cervical glands were of a much firmer texture, and much fibrous tissue was observed, forming irregular interspaces, in which nuclei were found. The central portions were yellow, and contained much fat (degenerating cancer). The great number of large nuclei resembled those found in medullary cancer, and this case appeared to be almost intermediate between medullary and epithelial disease.

CASE XVI. *Cancer of the œsophagus. Death from exhaustion.*—Mrs. B—, æt. 54, a stout married woman, who had ten children, and ceased to menstruate for four years, experienced seven months before her death pain at the middle of the sternum, at the scapula and loins; the pain was increased on taking food; she had slight palpitation of the heart, vertigo and flatulence; her sleep was disturbed by pain; passing a probang down the œsophagus much increased the pain. This became very severe, and was aggravated by a chronic winter cough; deglutition became more difficult, nutrient enemata were used, but she gradually sank, seven months after the commencement of the dysphagia. The central portion of the œsophagus was converted into a softened discoloured brain-like substance from two and a half to three inches in extent. No gland or other structure was affected, and the remaining part of the tube was healthy.

CASE XVII. *Cancer of the œsophagus. Gangrene of the lung.*—George D—, æt. 45, a very intemperate man of irregular habits, was admitted into Guy's, suffering from symptoms of stricture of the œsophagus, with supposed phthisis. The breath was exceedingly offensive. At the apex of the left lung was a large gangrenous cavity. There was extensive ulceration of the œsophagus, which had ulcerated

through to the vertebra, and communicated with the left bronchus. The sternal and mesenteric glands were enlarged.

CASE XVIII. *Cancer of the œsophagus, with pleurisy and contracted kidneys.*—John H—, æt. 66, seven months before his death first experienced difficulty in swallowing solids. The dysphagia increased, and swallowing at last became impossible. Till two days before his death he had no pain in his throat, but severe pain in the left side; this arose from pleurisy, the right pleura being found to contain more than a pint of purulent serum after death. There was constriction of the œsophagus, with some ulceration and considerable thickening around it. The kidneys were granular.

CASE XIX. *Carcinoma of the throat. Strumous pneumonia.*—Martha M—, æt. 31, admitted December 5, 1855, under Dr. Addison's care, and died on the 20th, at two P. M. She was a short woman, married, and had been confined fourteen months previously, but since that time had not been well, having suffered from a slight cough. For three weeks she had had difficulty in swallowing, and this had increased to such an extent that she was on admission unable to swallow food, except with extreme difficulty. She could, with much distressing pain, swallow solids, but fluids at once regurgitated through the nose. She suffered from hunger, but still more from thirst, and was extremely emaciated. The glands at the angle of the jaw on the right side were much enlarged, giving her emaciated countenance a miserable appearance. Her voice was nasal, and she was extremely exhausted. She was too ill to allow the chest to be examined, and died on the 20th. Her relatives, brother, &c., died of phthisis. On removing the larynx and tongue the soft palate was found to be about twice its natural thickness, irregularly tubercular, and brawny; the posterior pillars of the fauces were affected in a similar manner (Preparation 1785⁷⁰). On the right side there was a communication from the pharynx into an irregular cavity, situated opposite or rather behind the angle of the jaw, about two inches and a half in length, and half an inch in breadth, and containing almost black sloughy substance. The glands were infiltrated with firm, cancerous product. The tissue of which the soft palate was composed consisted of an immense number of nuclei. In the lungs, there were firm adhesions at the apex of the right lung, the pleura being semi-cartilaginous. In the remaining part of the lung numerous minute tubercles were observed beneath the pleura, and at the lower lobe there were also moderately firm adhesions. The left pleura was free. At the apex of the right lung was an irregular vomica, capable of holding about two drachms of fluid, with a smooth lining, and surrounded by iron-gray lung, and several opaque tubercles. At the lower lobe a considerable portion of the lung was red and consolidated, and several lobules infiltrated with pale yellow, low organized deposit, breaking down in several parts, and precisely resembling the lung observed in cases of acute pulmonary phthisis. There was considerable congestion of the bronchi, and tenacious mucus in them. The left lung was congested, but otherwise healthy. The bronchial glands were black from pigment, and those quite at the base of the neck were firm, white, and dense, consisting of nuclei resembling those in the palate. In the lung, the tubercles presented no nuclei resembling those in the diseased palate, nor consisting of cancerous growths, but were composed of imperfectly developed nuclei, dark pigmental granules, and some nucleated cells. The tissue of the thickened pleura consisted of fibrous tissue. *Heart* exceedingly small, destitute of fat; its cavities contained moderately firm clot, and the valves were healthy. *Liver* healthy, so also the spleen. Stomach and intestines contracted and healthy, except the rectum, and sigmoid flexure, the mucous membranes of which were congested in longitudinal stripes; and numerous minute superficial ulcers were scattered along those patches.

This case is one of great interest in the connection of cancerous disease of the pharynx with strumous pneumonia—diseases rarely conjoined, occurring at different periods of life, and considered antagonistic the one to the other. In advanced life, where death has occurred from cancer, we sometimes find the remains of strumous disease from an earlier period of life, calcareous, degenerated glands, or such a mass at the apex of the lung, surrounded by dense lung tissue; such cases are, however, rare and exceptional.

CASE XX. *Cancer of the œsophagus. Left pneumogastric involved. Pneumonia.*—William E—, æt. 50, admitted July 30, 1856, under Mr. Callaway's care, and died September 18. He had suffered from dysphagia for six months, and could not swallow solids. He had cough, and expectorated tenacious mucus. His cough and expectoration became worse, and the lung tissue involved. During the last week of his life, he swallowed with more ease. Inspection eighteen hours after death. Head not examined; the abdominal viscera were quite healthy; body much emaciated. On removing the sternum, the disease was at once exposed; and on trying to remove the lungs, the ulceration of the œsophagus broke through into the left pleura. This ulceration, extending from the cricoid cartilage to the bifurcation of the trachea; the edge well defined, raised, and yellowish; the central part ulcerated, and the whole circumference of the œsophagus involved; in front, the cartilages of the trachea were exposed, and just above the bifurcation was an opening about the size of a sixpenny piece, with irregular serrate margins. This ulceration extended downwards and outwards, and was closely connected with the external surface of the left bronchus; it had involved the pneumogastric nerve on that side, one of the larger branches of which was truncated. Posteriorly, the vertebræ formed the boundary of the ulceration. The greater part of the lower lobe of the left lung was in a state of gray hepatization, and towards the apex was some iron-gray hepatization, with whitish tubercles. These appeared to be of a cancerous character. In the right lung was another small mass of this condensed lung. Slight affection of the adjoining bronchial glands. On microscopical examination, the ulcer and bronchial gland were found much decomposed; but there was no doubt of its being of the character usually called epithelial cancer.

The more easy respiration towards the last week of life, is possibly explained by the extension of the ulcer having destroyed the whole of the circumference of the œsophagus, and thus prevented any spasmodic obstruction.

The pneumonia of the left lung—that on which the pneumogastric was involved—was, no doubt, accelerated by the injury to that nerve; but it must be borne in mind, that the left bronchus was surrounded, or, rather, the cancerous growth was firmly adherent to it.

CASE XXI. *Cancer of the œsophagus. Communication with left bronchus. Pneumogastric involved. Old vomica in the lung.*—George W—, æt. 53, admitted into Job Ward, under my care, September 3, 1856; he was an old man, emaciated and gray; he had been a blacksmith at Chatham, and, till six weeks ago, stated that he had enjoyed good health; at that time he experienced pain in swallowing food, especially solids which were almost at once rejected. He had pain across the sternum. The day of admission he came from the North Foreland; he was exceedingly prostrate, emaciated, and cachectic; the pulse feeble; the heart irregular, with a slight bruit; no tumour or enlarged glands could be felt; the abdominal aorta pulsated very distinctly. The abdomen was collapsed; in the chest were general bronchial râles; his breath was not offensive as in sloughing lung; and he had no distressing cough, but hiccup. On the 6th, he was more prostrate; the hiccup distressing; the motions black; and he was bringing up brownish-coloured blood; he gradually sank, and died on the 8th, at 2 A. M. Inspection was made twelve hours after death. The body much emaciated. *Œsophagus.*—From two to three inches from the commencement of this canal were several small ulcerated surfaces of a pale, yellowish colour, and depressed in the centres; in about an inch further the whole of the walls of the œsophagus were destroyed, commencing at a defined margin; beyond this part was an irregular flocculent gray tissue, floating out when placed in water; it was found upon a dense fibro-cartilaginous base, firmly adherent to the trachea, aorta, and other tissues; about an inch from the left bronchus was a circular opening, about three-quarters of an inch in diameter, forming a communication between the œsophagus and the bronchus; it contained a flocculent gray mass, which almost obstructed the bronchus. The bronchial glands were some of them partially infiltrated. The pneumogastric extended into the dense tissue at the base of the ulceration, and some of its branches were exposed at the floor of the ulcer. The destruction of the œsophagus extended to the diaphragm, and passed through it, so as to form an irregular

sloughing cavity below that muscle, bounded partly by the stomach, by the cellular tissue, by the large vessels, and partly by the left lobe of the liver. The cardiac opening into the stomach remained in its normal condition; but a second opening had been formed near it, from the abscess just mentioned. The ulceration was also extending into the liver. The branches of the sympathetic were partially destroyed, but could not be satisfactorily dissected; some were very hard; on microscopical examination, nuclear nerve fibre, apparently undegenerated, could only be detected. The coronary artery was obstructed by clot; some of the glands at the lesser curvature of the stomach were infiltrated. The ulceration almost extended into the thoracic aorta; that vessel was exceedingly diseased, from atheroma and ossific deposit, and in two parts had a greenish appearance, and there appeared to be minute communication beneath a bony plate and the ulcer in the œsophagus, but no probe could be passed. On examining the upper margin of the œsophageal ulcer, large cancer cells were detected and some nuclei; the surface of the flocculent growth consisted of pointed processes filled with granules, sometimes several from one trunk. The stomach was exceedingly contracted, slightly of hourglass form; the mucous membrane healthy. The left lobe of the liver, which was somewhat enlarged, almost obscured the stomach; the liver itself appeared healthy, weight 3 lbs. The pancreas and spleen were healthy; the gall-bladder contained some bilious mucus. The bronchi were congested and full of frothy mucus. At the left apex was an old vomica, surrounded by iron-gray lung, in one part firmly calcareous; its lining smooth; it would contain about 3ss of fluid; its contents were dirty mucus. The pleura, on the left side, was universally adherent; on the right, partially so at the apex. The right lung also contained a small vomica, but there were no tubercles in it; a small, white, dense one, of questionable character, was situated beneath the right pleura. The remaining part of the lungs were œdematous. The pericardium contained an excess of fluid; the heart and its valves were healthy; the aorta was exceedingly diseased throughout, rough, scabrous, and bony; weight of heart $9\frac{1}{2}$ ounces. The kidneys were atrophied, and contained several cysts.

Remarks.—The pain at the sternum, difficulty in swallowing solids, the emaciation, cachexia, age, all indicated organic disease of the œsophagus. The general bronchial râles pointed to some communication having been set up; and such was believed to be probable.

There was no pain at the scrobiculus cordis, nor was there any apparent indication of the abscess which existed. The prostrate condition of the patient, probably, prevented more manifest peritonitis from developing itself.

The disease had, probably, existed for a longer period than six weeks, from the destruction of nearly the whole œsophagus, and the firm character of the tissue which bounded it.

It was evidently cancerous; although no other part except those in immediate contact were affected. The villous flocculent character of the growth in the œsophagus, with evident cancer cells at the margin of the ulceration, appeared to indicate that it somewhat differed from ordinary so-called epithelial cancer.

The small vomica at the left apex was not diagnosed; it appeared to have been in a passive condition, but its association with cancerous disease is an exceedingly interesting character.

It is doubtful whether any blood oozed from the aorta, or whether that effused was from the coronary of the stomach.

Stimulants, beef-tea, milk, julep of ammonia, and ether, with lead and opium, were prescribed; it is however probable that the stimulants passing into the false cavities which had been formed,

tended rather to irritate than to produce effectual benefit. Nothing more, however, could have been done, except, perhaps, free nutrient injections, but the patient could swallow fluids and retain them, so that this appeared scarcely called for.

CASE XXII. *Cancer of the œsophagus. Chronic pneumonia. Vomica. Acute pneumonia.*—William G—, æt. 69, applied to me, Dec. 4, 1856, suffering from dysphagia. In early life he had been an attorney, but had evidently been reduced in circumstances; for twelve months he had cough and shortness of breath, sometimes palpitation of the heart, but no hæmoptysis; for twelve months also he had pain across the chest, but no expectoration; his health continued tolerable till two months before I saw him, when he first experienced difficulty in swallowing; this gradually increased in severity, so that in December he was only able to swallow liquids, and that with considerable pain. The pain was situated about the level of the third rib, at the sternum; the sensation being as if a foreign body was retained at that part; the ability to swallow was occasionally relieved, but never completely so, nor did he ever become free from pain. On examining the chest it was found flattened at the right apex, and there was tubular breathing at that part, with mucous rattle on the whole of the right side; the voice was slightly increased in resonance; at the left apex the respiration was coarse; and sibilant râles at the base of that lung. The heart was feeble, but nothing abnormal was detected in it, or in the abdomen; there was slight pain in the back, between the shoulders; he had an aged appearance, moderately emaciated; the tongue clean; the bowels regularly open; the urine healthy, non-albuminous. The arteries at the wrist and in the neck rigid; and no enlarged glands could be felt in the neck. He was recommended not to attempt solid food, but to take milk, eggs, &c., and a cough mixture. December 17, he was worse, and for three days had been scarcely able to swallow any food; it appeared to lodge in the throat; nothing, however, could be seen, and there was no evidence of aneurism. He had more pain between the shoulders; there was occasionally, for half an hour, slight relief to the dysphagia, but he was more distressed; with the bronchial breathing at the left apex, there was gurgling, and his cough was troublesome; he said that he expectorated the milk which he had attempted to swallow; he was exceedingly feeble, and was not able to take any sleep. There was evidence of old disease at the apex of the right lung; and acute bronchitis with it; with these were associated tolerably clear evidence of organic disease of the œsophagus, probably cancerous; such was my opinion at that time, and it appeared probable that the disease had extended into the bronchi, as is frequently the case. In this condition, he was admitted into Guy's under my care; he was requested not to attempt to swallow, and several nutrient enemata were given; the repeated attempt appearing to produce spasmodic contraction of the œsophagus. The following day he swallowed with greater facility, and could take beef-tea, eggs, and milk, with a little brandy; his cough, however, was more troublesome; the sputum was purulent, nummulated, and, on microscopical examination, presented no evidence of cancer cells, but some curved elastic fibre, resembling lung structure, and large inflammatory granule cells. After admission no food or milk was vomited. He continued in the same state, sometimes for a few days much more comfortable. A small quantity of cod-liver oil was given and morphia at night. During the month of January, he continued to emaciate, and became more anæmiated; he took his food with more relish: but the attempt, at my request, to swallow a portion of softened bread produced great discomfort. Morphia, hydrochloric acid, and calumba afforded slight relief. On February 23, his mind was wandering; the stools were discharged involuntarily; the following morning he died. On inspection, the lung was found to be very firmly adherent at the right apex, a thick dense layer of fibrous tissue was with great difficulty separated: the whole of the right pleura was destroyed; on making a section of the right lung, a small vomica was found at the apex surrounded with iron-gray lung, the surface was smooth; the lower lobe was in a state of hepatization, and some lobules were red and consolidated; there were also some smaller granular masses. The left lung was in a similar condition, except the disease at the apex; the pleura over the lower lobe was covered with a thin layer of lymph. Some of the bronchial glands were slightly infiltrated with cancer, but there was no evidence of cancer in the lungs.

In the œsophagus was an ovoid mass, about 6 inches in length, and one in thick-

ness, attached at the root of the lung, and reaching nearly to the cricoid cartilage; the canal was dilated; the mass was of a pale yellowish colour, and softened in the centre; it was adherent only on one side of the tube, and no smaller tubercles were observed on the mucous membrane; no communication with the trachea, or bronchi, existed; the tumour consisted of nuclei and nucleated cells resembling medullary cancer; none of the blood cells usually found in epithelial cancer were observed. The pneumogastric nerves were free, and the disease appeared to have commenced in the mucous membrane. The heart was healthy, so also all the abdominal viscera; the intestinal canal was much contracted, but contained solid feces. The liver was slightly congested, the gall-bladder much distended.

The existence of a disease so closely resembling pneumonic phthisis as that found in this case, was very interesting when we consider it in connection with the cancerous disease of the Œsophagus, and the age of the patient. It was my opinion, during life, that the disease in the Œsophagus had extended into the bronchi, but this was found not to have been the case on inspection after death. The only other disease which appeared to be probable as a cause of the dysphagia was aneurism, but the persistence of it in every position, and the absence of other signs of aneurism, led me to believe that the obstruction was of a cancerous character. If the patient had been much younger it might easily have been supposed that the case was one of ordinary phthisis, with severe ulceration about the larynx and epiglottis; we had evidence of chronic disease of the lung, with acute disease; and in phthisis the dysphagia is sometimes exceedingly severe and distressing; but the patient did not lose his voice, the food was never regurgitated through the nose, nor did it produce spasmodic cough; the obstruction was evidently below the epiglottis.

No attempt was made to explore the Œsophagus with any bougie or tube; the danger and discomfort which would have arisen from it did not warrant such an attempt being made.

The use of nutrient enemata, even for a single day, removed the very urgent dysphagia which existed on his admission. In his own room he had tried to swallow, till he found himself exhausted and unable to do so.

Obstruction of the Œsophagus from pressure of aneurismal or other tumours.—The Œsophagus is in close contact with the aorta, and we frequently find that dysphagia is one of the symptoms of aneurismal dilatation of that vessel. It is no uncommon thing to find death suddenly taking place from rupture of the aneurism into that canal, although in many instances death may arise from different causes, even if there has been considerable pressure, and sloughing of the Œsophagus produced. The pain, dyspnœa, and dysphagia, in some of these cases, is much relieved when the patient bends the body forward, so as to remove the pressure from the structures beneath. In instances such as these, we have other indications of the nature of the disease; neither is the emaciation so great as we find in previously mentioned cases, although the paroxysms of dys-

pnœa and pain are exceedingly severe; and the patient is at times able to swallow with comfort.

CASE XXIII. *Aneurism of the aorta and sloughing œsophagus.*—James F——, æt. 34, was admitted, under Dr. Hughes's care, November, 1855, and died in January, 1856; he was a temperate man, married, and a labourer at Dartford. Sixth months before his admission, after having been engaged a short time previously in carrying very heavy weights, he experienced pain in the left breast; this pain became much more severe, and also extended between his shoulders, but there was no tenderness in the back. December 4, the pain at the left nipple became more fixed, and there was a slight systolic bruit. January 1, Dr. Hughes noticed that the radial pulse was weaker on the right side, and he was found to have difficulty in swallowing solids. This dysphagia increased in severity and his dyspnœa became more distressing. January 20, he was unable to swallow food; his face was livid, dyspnœa urgent, and his pain severe. He died on the 25th. On examining the chest, the lungs were emphysematous, pale, but moderately collapsed. There was acute inflammation of the pericardium, and considerable injection of the pleura on both sides. On turning aside the lungs, an aneurismal tumour, about the size of a large orange, was found at the termination of the arch of the aorta; its walls were thin; the posterior part of the vessel was entirely destroyed, and communicated with a cavity in front of the vertebræ, one of which was absorbed. There was scarcely any fibrin in the sac. The aneurismal tumour had pressed upon the œsophagus, and quite obliterated its canal; the whole of its walls were of a greenish colour, very offensive, and in a sloughing condition. Still no perforation had taken place. Both bronchi were compressed. Two other aneurismal tumours were found connected with the ascending and transverse portions of the arch of the aorta. Other viscera were healthy.

CASE XXIV. *Aneurism of ascending aorta rupturing into pericardium. Communication of œsophagus with left bronchus.*—Frederick K——, æt. 23, admitted under Dr. Gull's care, January 23, and died April 26, 1856. He was a hawker, and had been living in the Old Kent-road; he had enjoyed good health till five months ago, when he struck his chest against a box hanging from a crane; a fortnight afterwards he experienced pain at the part; this gradually increased till three weeks before admission, when he was obliged to give up work. On admission, he complained of pain in the chest, a distinct pulsation could be felt between the second and third ribs on the right side, and a jar with the second sound of the heart. There was pain at the seat of pulsation, and along the border of the pectoralis major, and down the inner side of the arm. The pain continued severe, and a systolic bruit became audible at the seat of the tumour. He could obtain no rest at night. On April 19, he had difficulty in swallowing, and this increased much in severity. On the 28th, after talking with his friends, he died very suddenly. On removing the sternum, an aneurism of the ascending aorta was opened, it had extended to the sternum on the right side. On further opening the pericardium, it was discovered to be full of blood, and a small irregular opening was found at its upper part into the aorta. The heart was of normal size; the left ventricle not hypertrophied; the valves healthy. The ascending aorta formed an aneurismal sac, about two inches and a half in diameter, principally on the right side. The lung was adherent, and it was nearly perforated. The aneurism extended as far as the left carotid; below the left subclavian was another small dilatation. At the centre of the œsophagus where it is near the left bronchus, was a slough, and an opening into the bronchus, with considerable inflammatory tissue; no communication, however, with the vessel. The remaining viscera were healthy. Although it appeared that the greater pressure from the aneurism was on the right rather than the left side, we can find no other explanation for this sloughing condition of the œsophagus, and its communication with the bronchus, beside the pressure which all these parts suffered from the distended aneurismal sac.

Cases of this kind should render us exceedingly cautious in the use of œsophageal bougies, lest they lead to the sudden rupture of an aneurism, and the death of the patient.

Gastric solution.—In studying the diseases of the œsophagus, gastric solution of its lower extremity must be borne in mind. This

subject has been very clearly brought forward in the communications to the *Guy's Reports*, by Mr. Wilkinson King, in the years 1842 and 1843. It is exceedingly frequent to find the mucous membrane of the Œsophagus abruptly terminating at the cardiac extremity of the stomach, from the solvent action of the gastric juice having extended to that line; but, on opening the canal of the Œsophagus itself, for several inches near its lower extremity, the upper margins of the rugæ are often found deprived of mucous membrane, and long shreds are observed, on stretching out the tube, these portions having escaped digestion. This solution extends into the mediastinum, as found in cases mentioned in the communication just referred to, or into the pleura itself, the contents of the stomach escaping into the left pleural cavity, that which is in closer relation with the Œsophagus.

Only two cases of this perforation of the Œsophagus have occurred at Guy's during the last three years: one in a case of fever, another hydrocephalus; so that it is a circumstance of unfrequent occurrence. The causes which lead to solution of the stomach are more clearly understood than formerly. Dr. Budd has very lucidly, in his work on *Diseases of the Stomach*, brought forward all that is known on the subject. The position of the body, the development of gases in the intestines pressing upon the contents of the stomach, the non-contracted state of the Œsophagus itself, are causes which produce the passage of the gastric juice into the Œsophagus. Sometimes, indeed, this pressure forces the contents into the pharynx, and we find them gravitating into the trachea and bronchi.

Ecchymosis.—Hemorrhage from the Œsophagus generally arises from the rupture of aneurismal tumours, or from cancerous disease; but in cases of fatal purpura, we sometimes find the whole mucous membrane covered by points of effused blood, and blood is also effused into the surrounding cellular tissue. This part, however, is affected only in common with the whole mucous surface of the alimentary canal, as well as with other membranes and gland structures.

CASE XXV. *Rupture of the Œsophagus*.—The following case warrants the belief that sometimes rupture of the coats of the Œsophagus takes place during life; the specimen is in the Museum of Guy's (No. 1799⁴⁶):—

M. Curtis, æt. 24, a cabinet-maker, of intemperate habits, attended a public supper, in September, 1842; during supper, he felt sick, and left the table; he vomited slightly, and returned home, with assistance. He then took a dose of castor oil; at 2 in the morning, he complained of severe pain across the epigastrium, and great difficulty in breathing; the abdominal muscles were rigid, the respiration laborious; the patient was found sitting up in bed, leaning forwards on his hands; his countenance was anxious, the pulse soft; the bowels had not acted; an emetic of antimony and ipecacuanha was administered, but without effect; at 7.30 A. M., there was less pain, but increased dyspnœa, and there was emphysema of the face and throat. The stomach-pump was used, but without effect, and he died at noon. On inspection, a large rent was found in the Œsophagus at its lower part, filled with ingesta, which were also extravasated into the left pleura; the pleura also contained castor oil. The

stomach and intestines were exceedingly distended with flatus, and the stomach partially dissolved by gastric juice. The rent in the œsophagus appears, in the preparation, to extend into the stomach, but was perhaps increased after death. It is probable that the œsophagus was much dilated with food, and that its coats were softened either by previous disease, or by digestion from gastric juice, regurgitated into it from the stomach, and there remaining sufficiently long to corrode its walls. There is no evidence that the stomach-pump increased the rent, for the castor oil which was found in the pleura was taken several hours before the stomach-pump was used; still, if it had been known that such a rent had existed, such a remedy would not have been applied; the severity of the symptoms rendered it probable that some poisonous substance might have been taken with the food, and the emetic failed to act; under the circumstances which existed, the use of the stomach-pump probably tended to relieve rather than aggravate the symptoms.

CHAPTER III.

ORGANIC DISEASES OF THE STOMACH.

THE greater number of cases of ordinary gastric disease are generally described as functional, or as those in which no structural change is believed to exist; but the increase of science, due to an advanced chemical, anatomical, and physiological knowledge, has already done much to throw light upon the heterogeneous mass.

ATROPHY OF THE MUCOUS MEMBRANE OF THE STOMACH.

Dr. Handfield Jones has drawn particular attention to the microscopical appearances of diseased conditions of the stomach; to degeneration of the mucous membrane; and especially to hypertrophy or atrophy of its follicles and glands.

The follicles of the stomach are easily observed under a low magnifying power, and appear to constitute a great part of the mucous membrane itself. On the surface of the mucous membrane are numerous minute pits, and the follicles open into them. At their lower extremity, they rest on a stratum of cellular tissue of varying thickness, but containing a very large quantity of elastic fibre. The bloodvessels may be seen, in sections of a portion of congested membrane, to extend between these gastric follicles, nearly in a straight course, and immediately beneath the surface of the membrane, and around the minute crypts upon it, to form a beautiful plexus of vessels. The sympathetic nerve may be observed, in microscopical sections, at the base of the mucous membrane, sometimes upon the capillary vessels, and at other times leaving them; but its ultimate division I have not been able to trace. There is no doubt that it forms an important element in the structure of the membrane. The surface presents columnar epithelium and mucus, and the follicles contain spheroidal epithelium and nuclei. It is these follicles, and the surrounding tissue, which undergo degenerative changes; as in every other gland these minute and simple ones appear to have varying degrees of functional activity. Thus, in many cases of fatal disease, with gradually increasing exhaustion, only a small quantity of food is taken for many days before death, whilst in other instances, the appetite is maintained to the last; we consequently often observe, in the one case, the follicles full of secreting cells and nuclei; in the other, perhaps, it is not an easy thing to observe them at all.

The microscope has done much to increase our knowledge of pathology, and our means of investigation; but, with this increase of power, we must add equal caution to remove all causes liable to mislead us. The mode which I have adopted in preparing sections, and which will generally be found a successful one, is to stretch the membrane over or between the fingers, and then, by means of Valentin's knife, make a section of the required depth and thickness. This is afterwards removed by scissors, and spread out in water by needle points. I have examined with great care a considerable number of stomachs from the *post-mortem* table of Guy's Hospital, but it is not necessary to mention the cases in which the membrane appeared in a healthy condition. In many of these examinations, I have observed appearances precisely corresponding to the descriptions and drawings of Dr. Handfield Jones; but I think very great attention must be given to the manner in which many of these appearances may be produced by the mode of making the preparation, or by changes after death. I refer to wasting of the follicles, nuclear deposit around them, and the development of cysts. The gastric follicles change very rapidly, and in a short space of time nothing can be observed but the termination of the follicle itself upon the submucous areolar tissue, and above this an irregular aggregation of granules and nuclei. The basement membrane also rapidly becomes dissolved; and this condition will be found, on microscopical examination, before the ordinary appearances of gastric solution are observable on the stomach. The greater curvature of the stomach is in this way generally too much changed to allow us to place much dependence upon its microscopical examination, and for this reason, it is evident that we have to avail ourselves of portions of membrane above the line of solution. The lesser curvature, however, and the pyloric region, which is less generally dissolved by the gastric juice, is the part most subject to morbid changes, although the cardiac portion should, however, be also examined when possible. Not only does the membrane become dissolved by decomposition, but, in some cases, becomes emphysematous, and presents minute vesicles and blebs, occupying the substance of the tissue. The appearance of the very minute emphysematous vesicles in the mucous tissue precisely resembled the appearance of a well defined cyst, surrounded by nuclei, in Case XXVII., recorded in this chapter. This is one source of fallacy, and another will be found in the fact that nuclei are readily separated from the follicles, in the preparation of the section, and become diffused between the structures. The contents of the follicles are easily detached, and, by the action of acetic acid, a perfect cast of the follicles will be often extruded, and project from the surface of the membrane. A third fallacy, which may considerably mislead us, is the appearance of the mucous coat, altered by the state of contraction of the submucous and muscular coat beneath. The mucous coat will expand to the largest amount of distension that the muscular coat allows. When the muscular coat

is contracted, the usual appearance of rugæ is presented, but a further contraction produces a mammillated appearance of the membrane. This may be sometimes observed after removing a portion of healthy mucous membrane, a short time after death, and immersing it in cold water, when in a few hours this state is produced. A thickened, chronically inflamed membrane, will, I believe, present *true* mammillation of the stomach; and in that artificially produced, the manner in which the fissures extend nearly to the submucous cellular tissue might lead us to attribute this appearance to a morbid contraction of the membrane itself. Dr. Handfield Jones gives, in his observations on the stomach, an original and interesting account of the production of mammillation; and he attributes these depressions to wasting of the membrane, the breaking up of nuclear masses, and contraction of the tissue beneath. This opinion requires confirmation, for, as far as my observations have gone, it would appear that mammillation is more common than the existence or evidence of solitary glands or separate nuclear deposits in the membrane, and that this appearance of simple mammillation may be easily produced artificially in a healthy mucous membrane. A fourth fallacy may arise from the direction of the section. The surface of the stomach being not that of a plane membrane, and its follicles opening into crypts, an oblique section may readily give the appearance of fibrous tissue abnormally developed, where such does not really exist.

The whole of the coats of the stomach are sometimes exceedingly wasted, but in fatty degeneration or atrophy of the mucous membrane this is not generally the case. There are several degrees of this wasting or fatty change. Thus sometimes the cells of the follicles, instead of presenting a simple nucleus, contain a great number of minute highly refracting particles, and almost resemble an inflammatory granule cell, while the appearance of the stomach itself is otherwise in a perfectly healthy condition; although these cells are also found in other states, as extreme congestion with superficial ulceration, &c., they appear to indicate a diminution of vital activity, rather than an excess of it. At other times, the stomach is found to be pale, and here and there studded with white points, somewhat resembling solitary glands, but not at all elevated above the surface. A horizontal section, in such a case, shows around the crypts at this whitened portion, minute highly refracting granules and fatty particles; and a vertical section presents a dark border on the surface, consisting of the same elements; these are also sometimes observed, more or less distinctly beneath the follicles.

A more advanced condition of atrophy shows the follicles to be entirely destitute of secreting cells, and only containing granules of fat, or perhaps wholly destroyed, with the mucous membrane irregularly pale. This state was well marked in the first briefly-recorded case.

Besides these forms and degrees of atrophy, which may be called secondary, there are others which arise from chronic inflammation

of the membrane, in which the structure appears thickened, dense, and the mere rudiments of gastric follicles remain. This may arise from fibroid degeneration or cancerous disease slowly encroaching upon the membrane adjoining it, and thus leading to atrophy and degeneration.

The symptoms observed in some of the cases in which this fatty change in the mucous membrane of the stomach existed, was a sense of great prostration and exhaustion, with complete loss of appetite. The tongue clean; no pain, or thirst, or vomiting, but inability to take food; vomiting has sometimes taken place, but possibly from other causes. It has been observed in phthisis, struma, exhausting suppuration, and often associated with fatty liver.¹

The effect of loss of nervous power in a limb manifests itself sometimes by extreme fatty degeneration of the muscular fibres, and in these we are able to trace distinctly the cause to its effect. We do not, however, know in the same way the precise influence or action of the large nerve-ganglia in the alimentary canal upon the viscera to which they are distributed; but in wasting diseases, such as chronic abscess or phthisis, we cannot suppose that with the diminished and impoverished condition of the blood, the wasting of all the voluntary muscles, and the gradual subsidence of every nutritive change, that these large nervous centres should alone continue to act with the energy of health. They are probably also affected, and in fatty degeneration of the follicles of the stomach, the cause is, probably, not in that viscus itself, but in the large sympathetic ganglia of the abdomen; and hence its association with other degenerative changes. Experiments have shown that the semilunar ganglia do not influence the *movements* of the stomach.²

These may correctly be called secondary diseases; they often are the source of great discomfort, demand considerable attention, and in not a few instances become the immediate cause of death. They are constantly observed in studying the pathological changes of the alimentary canal. Many of the cases of acute disease continually met with are of this character, and are found, on careful examination, to have arisen in the course of maladies which have for months or years been slowly advancing, and sometimes without the knowledge of the patient.

CASE XXVI. Strumous disease of the third rib. Phthisis. Ulceration of the intestine. Strumous disease of kidney, ureter, bladder, prostate gland, vesiculæ seminales, spermatic cord and testis. Fatty degeneration of the stomach and liver, &c.—John S—, æt. 50, was admitted under Barlow's care, September 27, 1854, in an almost dying condition, but apparently suffering from phthisis; no history could be obtained, and he died October 2d.

The case is a good illustration of a strumous subject dying from exhausting disease, almost every organ and mucous membrane being affected with strumous disease; the stomach, however, presented only atrophy and fatty degeneration, probably dependent on his exhaustion and diminished nervous power.

Inspection was made forty hours after death. The body was much wasted. A

¹ Handfield Jones.

² Müller.

fistulous opening passed from the third costal cartilage into a pleural abscess. The lungs were disorganized and tubercular.

The *stomach* was flaccid; its mucous membrane covered with a thick layer of mucus, and presented, especially towards the pyloric extremity, several opaque white patches, about a quarter of an inch in circumference. These parts were found to consist of degenerated mucous follicles. The follicles had their usual outline; but were filled with minute fat-particles, and were destitute of secreting cells.

The small and large *intestines* had been ulcerated, and long cicatrices extended for several inches. The mucous membrane was congested and much puckered, and the muscular coat hypertrophied; the rectum was similarly affected, but in a less degree. Some of the mucous follicles in the cæcum were examined, and found to contain abundant secreting cells; in this respect they were very different from those of the stomach.

CASE XXVII. *Thinning of mucous membrane, with the appearance of minute cysts (probably post-mortem) from the stomach of a man who died five weeks after taking a solution of chloride of zinc.*—He was an Irish labourer, whom a fellow-labourer induced, by way of a joke, to swallow some of the solution of zinc. Its imbibition was followed by vomiting, promoted by an emetic. After he was admitted into Guy's, rapid emaciation followed, and death in five weeks.

Examined thirty hours after death.—The stomach was distended and injected; at the cardiac extremity and greater curvature several gray lines of discoloration existed; internally, it was generally covered by a layer of mucus. The rugæ were not observable. The lining membrane was *emphysematous* at the greater curvature. Throughout the stomach the mucous coat was thinned, while the muscular one was hypertrophied. At the pylorus, the mucous coat regained its usual thickness, and presented a frilled margin, as at the circumference of an ulcer.

On examination, above the emphysematous line, the ends of gastric follicles were observed, but not covered with the usual thickness of membrane. Near the pylorus, the membrane appeared equally thin, but also presented numerous very minute transparent vesicles, which projected upon the surface of the membrane, and appeared to consist of a cyst wall, containing fluid and nuclei. The cyst, when ruptured, presented a halo of fluid and granules around it. Other more minute cysts were found in the substance of the membrane, particularly towards the greater curvature. They were about one-thirtieth to one-tenth of an inch in diameter.

At first, it appeared that the development of cysts in this case had taken place before death, and were true structures of this kind; but the greater curvature presented large blebs of air, and such, no doubt, were these. The separation of the elements of the membrane by the development of gas had given rise to this deceptive cystic appearance. This emphysematous condition of the mucous membrane, I have observed in some other cases; but the reason why it should not more frequently take place is not clear, unless it arise from inflammatory disease changing the character and properties of the surface of the membrane. It occasionally happens that we find structures resembling solitary glands of the intestine in the mucous

membrane of the stomach. Thus, a short time ago, in examining the stomach of a child who had died from chorea, I found the whole membrane presenting numerous whitish specks, which consisted of the structures imbedded in the substance of the membrane. There was, however, no evidence that such glands existed in the stomach of the man poisoned by zinc.

Post-mortem solution.—The solution of the stomach, after death, by the action of the gastric juice, interferes much with the pathological observations in diseases of the stomach.

John Hunter drew attention to it, in connection with diseases and injuries of the head. T. Wilkinson King, of Guy's, added definite facts in reference to the degrees and position of the solution, and Dr. Budd, in his treatise on *Diseases of the Stomach*, has still further and very fully elucidated the subject. The gelatinous softening which has been described by Andral, Cruveilhier, &c., as occurring during life, is now generally believed to be a form of this solution.

It must be always borne in mind that after death blood gravitates into the most depending vessels; that exosmosis takes place, and chemical action exerts its influence, all unchecked and unmodified by vital action.

The amount of gastric solution depends, in part, on the amount of gastric juice actually in the stomach at the time of death. Sudden death during digestion, or in some forms of cerebral disease, especially inflammatory disease in a young subject, appears to stimulate the follicles to pour out secretion at irregular times, and in excessive quantity. Time is required for the solution, and a moderate temperature, the action being much more rapid in summer than in the cold of winter. The stomach is sometimes found completely perforated, although food has not been taken for several hours before death.

The simplest condition of this change is thinning and softening of the mucous membrane, so that it is with great readiness detached; if the bloodvessels be empty, the colour is pale, and it has a semi-gelatinous appearance; generally, however, the vessels contain blood, and the hæmatine exudes, forming greenish-brown lines in the course of the vessels, or over the whole of the dissolved part, from the action of the acid upon it, and sometimes almost black in colour. The action may be so slight that it is only detected when we examine a section of the membrane with the microscope, or the mucous membrane is exceedingly thinned, or entirely destroyed; and further, the gastric juice then acts upon the muscular coat, dissolving it, and at last the peritoneum. A ragged perforation is formed, and the contents of the stomach transude into the peritoneal cavity. Adjoining viscera, as the spleen, become acted on, unless adhesions exist, as we find in strumous peritonitis, which has obliterated the cavity.

The extent of the dissolved part is generally marked by a defined line, showing the level to which the solvent fluid has attained. This

is generally along the greater curvature; but sometimes, from the position of the body, we find that it is most in the region of the lesser curvature, or even that the duodenum is most acted upon (see Duodenum), and may be perforated while the stomach is intact. Or from the evolution of gases, position of the body, &c., the fluid is pressed into the œsophagus, the mucous membrane dissolved, and sometimes all its coats perforated, so that the contents of the stomach are found in the pleural cavity.

John Hunter explained the action of the gastric juice by the chemical action being unchecked by the vital state of the parts. Dr. Pavy¹ has shown that the gastric juice will act upon living tissues, by introducing a rabbit's ear, and leg of a frog, into a gastric fistula. These parts, however, in which the circulation could not be as free as usual, are so far not conclusive experiments, though interesting in their character and result.

When the anterior part is acted upon, Dr. Budd² explains the fact by the small quantity of gastric juice which was in the greater curvature being neutralized, either by ammonia evolved, or the exudation of alkaline serum from the blood, or from dropsical effusion, whilst the small quantity on the anterior part has not been acted upon. The action of the gastric juice, Dr. Budd states, may be checked by alcoholic liquors, or by medicines administered before death. We are not acquainted fully with the causes of its being so much more manifest in some cases than others: for, whilst agreeing with the author just cited, that it is occasionally very manifest in cases of phthisis, renal disease, typhoid fever, and cancer of the uterus, or disease of organs in which the stomach is functionally disturbed, we shall find an almost equal percentage of those cases in which such causes do not exist. It is certainly more manifest in children, and in inflammatory disease of the brain, and generally more marked in acute than in chronic disease.

Inflammation of the stomach.—Catarrh of the stomach takes place probably in an acute form, and is the cause of some of the varieties of dyspepsia; but we are not cognizant of conditions, observed after death, indicative of this state. It very rarely happens that any can have the opportunities possessed by Dr. Beaumont, of observing the appearance of the gastric mucous membrane; he found sometimes an erythematous condition with deficient gastric secretion, arising from irritating food or stimulants. These cases are generally considered as dyspepsia, but may not be more functional in their character than coryza or slight conjunctivitis. In ordinary catarrh, after exposure to cold, we find there is generally partial, often complete, loss of appetite, and occasionally diarrhœa; the mucous membrane of the stomach joins in the general condition.

In the dyspepsia just mentioned as arising from irritating food or

¹ Guy's Reports. Vol. ii. Third Series.

² Budd on the Stomach.

stimulants, the symptoms are nausea or vomiting, increased by food, injection of the tongue and enlargement of the papillæ, tenderness at the *serobiculus cordis*, pain extending to the back between the shoulder-blades, languor, headache, and incapacity for exertion, which appear to indicate an inflammatory condition. Stimulants aggravate the discomfort; but leeches at the *serobiculus cordis*, cool drinks, soda-water, or ice, mitigate these symptoms, and may be used with liquor potassæ and demulcents, or magnesia and opium. If the bowels are confined, colocynt and calomel, or aloes, should be given: they act upon the intestines, without irritating the stomach; five to ten grains of calomel are sometimes administered, and followed by a saline aperient draught, so as to produce a full and copious evacuation.

This state, in not a few instances, passes into chronic gastritis, indicated by severe pain at the *serobiculus cordis*, extending to the spine, and increased by almost every form of food, sallowness of the complexion, injection of the tongue, which is sometimes like raw beef, red and deeply injected, by a compressible pulse and emaciated body. This condition is often very obstinate, persisting month after month; we have no evidence of actual ulceration, as shown by hæmatemesis, but it is probably chronic congestion and irritability of the stomach. The gums sometimes become spongy, and the mouth sore. We do not possess sufficiently clear indications to affirm, in these cases, whether ulceration of the mucous membrane exists, in many instances probably not.

The means most calculated to remove this state, are food of a character which is easily digestible, small in quantity, and well masticated. Alkalies and salines relieve the irritability and congested state of the mucous membrane; for instance, solution of potash, or the bicarbonate of potash or soda, calcined or carbonate of magnesia, administered with almond emulsion, or camphor mixture, or any demulcent. If there be neuralgic pain, it is well to add a few drops of dilute hydrocyanic acid, tincture of henbane or conium, the solution of morphia, or a preparation of opium.

In some cases, I have seen very great benefit by the administration of lemon-juice: the pain has subsided, and the toleration of food, and ability to digest it have considerably increased. It must be borne in mind, in these cases, that whilst vegetable food appears to be less easy of digestion, and often has to be prohibited, if months are allowed to pass without its use, the health fails on that account alone, and increased cachexia is produced; the administration of fruit, oranges, grapes, &c., is advisable; the juice of a lemon may be taken daily, with relief to pain and distress at the *serobiculus cordis*.

The application of leeches or blisters is often of service, and in some cases I have known benefit derived from the introduction of a seton.

Chronic catarrh of the stomach, and of the intestines, although arising from inflammation affecting them in common with the pulmonary mucous membrane, is more frequently observed as a consequence of congestive disease of the portal system. The mucous membrane becomes congested, often intensely so, or even ecchymosed; it has a swollen œdematous or granular appearance, and is covered with a thick and tenacious layer of mucus. This is sometimes found to be alkaline in its reaction, is with difficulty washed off by water, and consists of mucous corpuscles, nuclei, and epithelium.

Thickening of the mucous membrane, and gray discoloration from the deposition of pigmental granules from the long continued congestion of the capillaries, are the result of chronic catarrh. The follicles of the stomach are found very distinct, and filled with nuclei and cells.

The cause of this condition appears to be long continued congestion. In chronic bronchitis and emphysema, in valvular or obstructive disease of the heart, in cirrhosis of the liver, and in other conditions, the vena porta, and the branches which constitute it, become overfilled with blood, and consequently, the capillary vessels from the mucous membranes of the viscera, by this means discharging their blood, also become surcharged; altered secretion, and the condition we have described, is the consequence; thus it is not peculiar to the stomach, but extends through the whole of the tract of the alimentary canal, in both the small and large intestines.

These conditions, then, are not in themselves primary, but we find the indications of cardiac, pulmonary or hepatic disease. Sooner or later, in most cases, the signs indicative of gastric catarrh come on, pain at the scrobiculus cordis, increased by food, pain between the shoulders, occasionally vomiting, flatulence, oppression at the stomach, malaise, constipation; the flatulent distension after food becomes exceedingly distressing, so that scarcely any can be taken with comfort, and solid food is almost discarded; an attack of hæmatemesis, or of bleeding from hæmorrhoids, &c., may remove the congestion, and afford comfort to the patient, but the symptoms are very quickly reproduced. The dyspnœa and palpitation of heart disease, the cough and gasping for breath of chronic bronchitis engage the attention of the patient, and obscure the less urgent ones of disease of the alimentary canal; it is when the former have been relieved, that attention is directed to the abdomen. This state of catarrh is often relieved by the same means which mitigate the original disease. Emptying the portal system not only diminishes the distension of the right side of the heart, and of the pulmonary vessels, but also the congestion, which is the direct cause of the catarrh of the intestines. Purgatives, saline, hydragogue, or mercurial, are generally used, and sometimes the more direct means of relieving the vessels, by the application of leeches to the anus. The administration of mineral acids, with demulcents, expectorants, or tonics,

according to the condition of the patient, affords great relief: so also the administration of steel.

The following are some of the cases in which we have found marked catarrh of the stomach:—

Elizabeth E—, æt. 46. Catarrh of stomach, with bronchitis.

George P—, æt. —. Catarrh of stomach, with pneumonia.

Mary H—, æt. 25. Catarrh of stomach, with contracted mitral.

James M—, æt. 22. Catarrh of stomach, cæcum, and colon, with diseased aortic valves and degenerated kidneys.

George C—, æt. 55. Catarrh of stomach, with diseased aortic valves.

Joseph S—, æt. 41. Catarrh of stomach, with superficial ulceration, diseased heart and kidneys.

Ann A—, æt. 23. Catarrh of stomach, with superficial ulceration, cystic disease of the ovary.

The cases of *acute inflammation* of the stomach which have come under my own observation have arisen from poisons, alcohol, arsenic, oxalic acid, chloride of zinc, sulphuric and nitric acids; in these there are two symptoms which demand particular attention: the absence of pain at the stomach, in most instances, unless perforation have taken place, and the marked prostration of strength and depression of the pulse.

In irritant and corrosive poisons, burning pain in the mouth and throat, charring of the mucous membrane, vomiting, irritability of the stomach, purging of blood, or of loose faecal evacuations, are produced, and, according to the strength of the fluid, and its action on the pharynx, œsophagus, and epiglottis, there is dysphagia, or dyspnœa. The vomiting is generally excessive and continued, it may be for weeks or months, till a fatal termination takes place. The vomited matters vary according to the character of the agent, and the extent of its chemical action.

The peculiar symptoms of each will be found described in Dr. Taylor's work on Poisons.

This absence of pain was shown in a marked degree in the case of poisoning by chloride of zinc, from Burnett's disinfecting fluid.

In the case of poisoning by alcohol, the patient died in less than twenty-four hours after taking it. The stomach was found minutely injected with arborescent vessels, which appeared to be the remains of an erythematous inflammation of the stomach. The man was of middle age, a vagrant. In the winter months, whilst following a man who was carrying a gallon bottle of brandy, the bottle was accidentally broken, and the spirit spilled in the road. The patient drank the spirit from the ground, by putting his mouth to the earth. A short time afterwards, he was observed to lean against the lamp-post, and gradually became insensible; he was taken to the station house, and, since it was thought to be ordinary intoxication, left

there for several hours; he was then admitted into Guy's, about two in the morning; the stomach-pump was used, and some dirty fluid brought up, which appeared to be muddy water. Some coffee was afterwards given to him. He spoke once, asking for some water, but died about twelve hours after admission.

The mucous membrane of the stomach was in the condition described, and contained some muddy fluid; the duodenum and upper part of the jejunum contained similar fluid.

The œsophagus was healthy, the liver and kidneys congested. The heart contained a moderate amount of blood, in both auricles and ventricles; not distended on the right side, as in death from apnœa; the lungs were congested in patches. The membranes and substance of the brain were much congested; but there was no smell of alcohol.

In another case, in which a woman had taken some oxalic acid, the quantity not known, vomiting and prostration were the only symptoms, and the patient gradually recovered.

The following case of poisoning by sulphuric acid is exceedingly interesting in the same respect; but here, the absence of complaint of pain can only be partially depended upon, on account of the mental condition of the patient.

CASE XXVII. Poisoning by sulphuric acid; death on the 11th day. Destruction of the mucous membrane of the lesser curvature and pyloric extremity of the stomach. Acute inflammation of the colon and small intestines.—Charlotte D—, æt. 55, admitted into Guy's Oct. 5th, and died Oct. 16th, at 11.30; she had been in Bethlchem Lunatic Asylum three times, and several members of the family had been affected with insanity; about seven o'clock on the morning of the 5th, she drank a wineglassful of sulphuric acid, before breakfast, when the stomach was empty. She was brought to Guy's, two hours afterwards, in a state of collapse, almost pulseless, and her extremities cold; there was no stain in the mouth, and she could not swallow magnesia mixture, which was administered to her; in two hours she became warm, and had vomited some grumous, dark-coloured matter. She continued to vomit blood, and to pass blood by stool; several times the vomited matter contained sulphuric acid. In the evening, she was able to swallow a little milk and arrowroot, and was decidedly better. For the next three days, she was very low, but there were no very urgent symptoms, though she continued to pass blood, and occasionally vomited grumous matter. On October 9th, four days after taking the acid, she swallowed without difficulty. She continued in a low condition, able to take a small quantity of food, but suffering from a kind of dysenteric diarrhœa. No blood, however, was passed, but rather pale, loose motions, and shreds of mucus. The day of her death, she spoke as usual, got out of bed, but in the evening, died unexpectedly, without any one being present with her at the time.

Inspection seventeen hours after death. Countenance exceedingly dejected, the body wasted, eyes sunken; hair gray. The calvarium was exceedingly light and thin; the depressions for some of the Pacchionian bodies were so deep that the external layer of bone only remained. The Pacchionian bodies were large, the brain atrophied. The mouth and throat were of a whitish colour; at the posterior part there was considerable injection, and the mucous membrane of the anterior part of the tongue was whitened. On each part of the posterior pillars of the fauces were white patches, loose, irregular, and consisting of elongated cells. This substance consisted of elongated cells and epithelium. Similar tissue was found adhering to the membrane, at the lower part of the œsophagus. The posterior part of the tongue was covered with ordinary squamous epithelium. The edge of the epiglottis was irregular, minutely serrate, as if it had been injured, and ulceration had followed. The membrane of the œsophagus was pale, and filled with yellow membranous flakes.

The cardiac extremity of the *stomach* was moderately distended; three inches from the pylorus the muscular coat was contracted. The peritoneal surface was not covered by false membrane, or particularly injected. On opening the stomach it was found to contain yellow grumous fluid, about $\frac{3}{4}$ in quantity, and a large thin yellow membranous mass, which was attached by one extremity to the walls of the stomach; this mass was 4 to 5 inches in length, and as many in breadth; other smaller patches of similar membrane were observed to be partially detached; the surface of the stomach beneath this membrane presented whitish gray tissue, in some parts slightly flocculent. The mucous membrane was destroyed along the lesser curvature, and for several superficial inches near the pylorus, and the surface irregularly flocculent. On examining the yellow membranous membrane it was found to consist of minute particles highly refracting light (fat from degenerating tissue); some indistinct markings resembling gastric follicles, and small bloodvessels filled with altered blood. At the cardiac extremity the mucous membrane was thin and granular; but at the centre of the greater curvature the lining membrane presented numerous nodules, red, about $\frac{1}{4}$ of an inch in height, the intervening depression of a dull gray colour. In some of these depressions were adherent yellow tissue—semi-detached mucous membrane. The raised isolated nodules consisted of mucous membrane, which had not been acted upon by the acid; the distended gastric follicles were very distinct; the follicles were also evident at the cardiac extremity of the greater sac. Along the lesser curvature, and at the pyloric extremity, the section presented involuntary muscular fibre; this was covered over by fibrous tissue, in some parts thin and irregularly flocculent, but near the pylorus forming a thicker layer; this tissue dipped down between the bundles of muscular fibre. At the pylorus were several nodules of undestroyed membrane; but for more than an inch and a half in the duodenum the membrane was destroyed, as at the pyloric extremity of the stomach. The intestine then became gray, and was covered over by a delicate adherent tissue in irregular patches, but contiguous the one to the other, generally transversely placed. The jejunum was very much congested, the ileum still more so, and at its lower part was covered by adherent diphtheritic membrane. The whole of the colon was acutely inflamed from the cæcum to the rectum; the mucous membrane was covered by adherent diphtheritic membrane; the submucous cellular tissue was white and thickened (oedematous), and the muscular coat distinct; the diphtheritic layer consisted of imperfect cells, mucus, granules, and highly refracting particles. The rectum was less affected. There was a small ecchymosed spot beneath the endocardium below the left semilunar valve of the aorta. The heart was flaccid, but its cavities contained fluid blood. The liver was healthy, but small. Spleen small. The pancreas, supra-renal capsules, and kidneys were healthy.

The symptoms usually following the administration of a poisonous dose of sulphuric acid, are discoloration and destruction of the mucous membrane, of the lips and mouth, intense pain, difficulty in respiration and deglutition, vomiting of bloody grumous fluid, and collapse—death generally follows in a few hours. The appearances after death vary, according to the strength of the acid; if concentrated, the mucous membrane of the mouth, œsophagus, and stomach are charred, sometimes every layer destroyed, and the adjoining structures acted upon.

The case detailed presents many points of interest, in a general as well as in a medico-legal point of view. The acid was taken not by accident, but by a melancholic woman, and the exact strength of it cannot be ascertained; but from inquiry it seemed probable that the commercial acid was diluted with three or four parts of water, and $\frac{3}{4}$ to $\frac{3}{4}$ taken. The acid had been used for cleaning brass; the bottle, previously nearly full, was found emptied of its contents. The symptoms are believed to have come on at once, and two hours afterwards, when admitted into Guy's, she was in a state of collapse;

vomiting of bloody grumous fluid took place, and loose evacuations containing blood were passed. On admission, the mouth did not appear charred or discoloured; and this led some to doubt whether sulphuric acid had been taken.

Death from poisoning by mineral acids takes place either in a few hours, or the patient rallies from the immediate effect, and dies from the severe organic change and inflammation; or in a third class, the primary effect is recovered from, but the patient dies from exhaustion, consequent on stricture of the œsophagus or loss of functional power of the stomach; the case detailed belonged to the second class; death did not take place till the eleventh day, from gradually increasing tendency to syncope. In poisoning by sulphuric acid, the bowels are generally constipated; here the purging of blood was followed by dysenteric diarrhœa.

As to the parts affected by the acid, the mouth, pharynx, and œsophagus were less injured than the stomach, and more quickly and completely recovered themselves; in no part of them could the mucous membrane be found destroyed, except at the tip of the epiglottis.

In the stomach, the mucous membrane was destroyed along the lesser curvature, and at the pyloric extremity: in these parts the muscular coat was covered by irregular fibrous or cellular tissue of greater or less thickness, and was of a slate gray colour; the mucous membrane, in this part, was separated in the form of a slough. The greater curvature was less affected, but the middle portion presented islets of raised uninjured membrane between grooves in which the mucous membrane was destroyed, and in some parts adherent in semi-detached sloughs. It might have been supposed that the part most affected would have been the greater curvature and cardiac extremity. The stomach was, probably, nearly empty, and the acid passed at once along the lesser curvature to the pylorus and into the duodenum. The condition of the duodenum was peculiar; it was partially injured, especially near the pylorus, by the chemical action. The rest was acutely inflamed. It may be a matter of doubt how far the acute inflammation of the small, but especially of the large intestine, was the result of the poison. We sometimes find, in other cases, that the large intestine and stomach are the parts most affected, partly, perhaps, on account of the contents being longer retained in the large than in the small intestine.

CASE XXIX. *Poisoning by chloride of zinc. Burnett's disinfecting fluid.*—Sarah R—, æt. 37, admitted December 24, 1856. She was a single woman, engaged in domestic service; her previous health had been good, but her habits intemperate; twelve weeks before admission she went to visit a friend in the evening, who gave her, in mistake for gin, three-quarters of a wineglassful of Burnett's disinfecting fluid. The precise strength was not known. She swallowed the draught, and at once felt a painful burning in the mouth, and in about a quarter of an hour vomiting came on, and purging in half an hour; neither the vomited matters nor evacuations contained any blood; the latter were passed involuntarily. Milk and water were administered.

No pain or abdominal tenderness was produced at the time, or at any period prior

to admission. She was conveyed home; her hands appeared swollen, and she staggered slightly. She walked up stairs and undressed herself; the following day she remained in bed, but was up on the third, and moved about the house. Vomiting was the only symptom: the ejected matters were at first thick stringy mucus, and afterwards bilious fluid; in a few days she washed a floor, and in about a fortnight tried a change of air to endeavour to recover her health: she remained in the same state till admission.

There had been dysphagia for a short time, two days after taking the poison, but this symptom did not recur. It appeared to her that her food lodged at the scrobiculus cordis—there had been no disturbance of the urinary organs.

On admission, she was rather emaciated, not particularly pale, and appeared to possess tolerable strength; the tongue was large and slightly furred; the pulse compressible; the stomach could only retain food (though of the simplest kind) for a short time; there was no tenderness in the abdomen, which was collapsed; the muscles rather rigid: the lungs and heart were normal. She had no cough, and appeared comfortable. *Magnesiae carbonatis* ℞j, *Acidi hydrocyanici dil.* ℥iij, ex aqua, were ordered three times a day.

Dec. 31. She complained of pain at the scrobiculus cordis; a mustard poultice was applied, and on the following day a blister; the irritability of the stomach, however, lessened, and the evacuations were healthy.

Jan. 4. She became much worse; the countenance haggard, and she apparently prostrate; the gums were slightly ulcerated, as if from mercury. *Potassæ chlor. gr. x*, *Ex. jul. bismuth. sed. ℥j*, were given three times a day.

8th. She had continued for the last three days in a dying condition, resembling a person with cholera, the eyes sunken, the countenance sallow, the voice scarcely audible, the hands out of bed, and almost without power of motion; the pulse exceedingly small, the abdomen collapsed, and without pain or tenderness, the respiration easy, but with a slight catch, and the pain appeared to be at the left base, so as to give the idea that she might have some pleuro-pulmonia; there were sordes on the teeth, the tongue could scarcely be moved. She was sensible, but appeared exceedingly prostrate and dying. She died the following morning.

Inspection.—Eighteen hours after death. The head was not examined. The mouth and pharynx were healthy; but the lower half of the œsophagus presented irregular ulceration, in longitudinal lines, or rather a series of small circular ulcers; there was no great congestion of the membrane remaining.—*Abdomen.* The intestines were collapsed, and the peritoneum had partially lost its transparency. The stomach was very much contracted, and the pyloric portion only observable. It was found that the omentum was adherent to the pylorus, so also the colon. On removing the whole of the stomach, with the spleen and the diaphragm, the small size of the stomach was still more manifest; it was only $5\frac{1}{2}$ inches in length, from the œsophageal opening to the pylorus, and $1\frac{1}{2}$ in breadth. At the cardiac extremity it was found to be firmly adherent to the spleen and the diaphragm, and on opening the stomach close to the œsophageal orifice was a pouch, resembling the finger of a glove, and about an inch in length; the extremity of this pouch was perforated, and passed into a cavity containing dirty mucous fluid, and situated between the spleen and the diaphragm. The sides of the pouch were smooth, and adherent to the spleen. The mucous membrane of the stomach was destroyed near the œsophageal opening; and at the pylorus for one inch the mucous membrane was completely destroyed and injected, the ulcer bounded by a defined line. At the centre of this all the outer coats of the stomach were destroyed, and extravasation only prevented by the adhesion of the omentum. In the intermediate portion, near the lesser curvature, in several places the mucous membrane appeared slightly raised, and the intervening portions smooth and firm, as if cicatrized; on carefully examining a section of this smooth portion with $\frac{1}{4}$ -object glass, immediately beneath the surface a considerable quantity of fibrous tissue was observed, and beneath some remains of distended gastric follicles. It appeared probable that the mucous membrane had at this part been superficially injured, and that the fibrous tissue was the result. The greater curvature was slightly discoloured by gastric juice, and appeared uninjured otherwise. The muscular coat of the stomach was considerably hypertrophied, especially near the pylorus, being full one-quarter of an inch in thickness. The duodenum, small and large intestines, were healthy throughout; the latter contained some scybala. The spleen was small; the liver and kidneys, uterus and ovaries, were healthy; the bladder distended with fluid. Left pleura firmly adherent; lower lobe in a state of red hepatization, soft, heavier

than water. Right pleura and lung healthy. Heart cavities contained fibrin; the heart itself healthy; tolerably firm; 8 oz. weight.

The absence of pain in this case, although there was extensive injury to the stomach, was very marked. The symptoms were exceedingly slight, vomiting shortly after food being the only prominent symptom; she was, however, depressed, the pulse feeble; she became perfectly prostrate; and her death appeared to result from asthenia. The pneumonia which took place on the left side was perhaps set up by the abscess on the opposite side of the diaphragm, or it was the result of the absorption of decomposing material into the blood.

The effect produced on the stomach a considerable time after nitric acid had been taken, is well shown in a case related with diseases of the œsophagus, in which a young person lingered for three months, suffering at last from the ordinary symptoms of obstructed pylorus; that part had been thickened and contracted, and had led to fatal obstruction—the stomach was enormously distended.

SUPERFICIAL ULCERATION OF THE STOMACH.

Many of the cases of catarrh just mentioned were caused by a state of great and long continued congestion setting up chronic inflammation of the mucous membrane, and in many instances followed by superficial ulceration. Superficial ulceration is, however, sometimes caused by inflammation, of a subacute character, of the mucous membrane itself. The mucous membrane in the former class is generally found congested, especially at the rugæ; and it is near the lesser curvature, or at the pylorus, that the membrane has been found destroyed. The ulcers vary exceedingly in number, being sometimes single, at other times they are several, about a quarter of an inch in diameter, extend through the mucous membrane, having irregular, sometimes rounded edges, minutely injected or pale in colour. They do not generally present any thickening of the sub-mucous or muscular coats; the intervening tissue often appears almost in a normal condition, or it presents arborescent or more general injection. Where chronic irritation has existed, the membrane is thickened. The ulcer is observed, on examination, to have destroyed irregularly the gastric follicles which bound it laterally, and is covered over with mucus, nuclei, cells, and epithelium. The symptoms which are associated with this condition are more marked in those cases which appeared to be of an acute character.

Symptoms.—Vomiting, pain at the scrobiculus cordis, pyrosis, loss of strength, or great prostration, were the symptoms observed. In one of the cases related, there were symptoms for several months of severe indigestion; in another, the patient with phthisis, after great intemperance, rapidly sank, apparently from exhaustion. In a third case there was very severe chorea. The great prostration

of strength was a marked symptom, and a most interesting one, taken in connection with the intimate union of the stomach with the large plexuses and ganglia of the sympathetic nerve. The association of some of these cases of superficial ulceration with pyæmia, appears to show that a general diseased condition of the blood predisposes or excites this change. Hæmatemesis sometimes occurs.

In the second class of cases, or those following continued portal congestion, vomiting of coffee-grounds substance sometimes took place several days before death, and was found in the stomach after examination; and it is probable that the ulceration had led to effusion of blood, which gave rise to this red-coloured vomited fluid. These cases were connected with renal anasarca and diseased heart, or with cirrhosis.

In the *treatment*, the application of leeches to the scrobiculus cordis, or of a small blister, affords considerable relief, trisnitrate of bismuth with conium, or with morphia, and hydrocyanic acid, soothe the irritated membrane, and diminish pain. Solution of potash, or the bicarbonate of potash, or of soda, with anodynes and demulcents, render the mucus less irritating, and they diminish the congestion of the mucous membrane. Nitrate or oxide of silver, in small doses, relieves the pain, and renders the stomach more tolerant of food.

Stimulants are not well borne, but, on account of the prostration, we are often tempted to give them; if they be absolutely called for, they should be diluted and mixed with food; wine with arrowroot or jelly; a small quantity of brandy with water; but nourishment often repeated without stimulant is to be preferred: isinglass with milk, lime-water or soda-water and milk, ice creams, &c. Neither is steel generally well borne, except in some cases where there is anæmia, and chlorosis with leucorrhœa; in the form of pill, or mixed with food, it can be taken where it could not be administered in more active forms.

In the congestive forms of ulceration, the relief of the portal system by purgatives, as calomel or colocynth and aloes, or the compound jalap powder, or the elaterium, removes much distress; but their action is followed by prostration, so that at last we are obliged to suspend them altogether. Diuretics and diaphoretics also tend to similar result; in this way small depletions afford temporary relief, but are not called for unless the respiration, or impeded heart's action, absolutely requires them.

CASE XXX. *Superficial ulceration of the stomach. Diseased supra-renal capsules.*—John J—, æt. 22, admitted March 20, and died on the following day. He was a stonemason by trade, residing at Lambeth. During the winter, had had pain in his stomach and vomiting. He slightly improved, but the day after Christmas, was confined to his bed, from great pain at the stomach and vomiting. The vomited matters consisted of watery fluid. At that time he had tic-douloureux. On admission, the extremities were cold, he was almost pulseless, his hands blue; had not had any diarrhœa, but had slight pain in the hypogastric region; he was sensible, the pupils

much dilated. He rallied a little after admission, but vomiting came on of bilious matter; he appeared to die from syncope.

The inspection was made seventeen hours after death. The body tolerably nourished, but the face of a dingy hue—"Melasma Addisonii." The brain and its membranes were normal, but there was slight subarachnoid effusion. In the chest, the trachea and bronchi were granular; at the apices of the lungs were lobules of iron-gray consolidated lung, with some calcareous deposit. The right side of the heart was moderately distended; the left firmly contracted. On carefully examining the stomach, the cardiac extremity presented post-mortem solution, but towards the lesser curvature, the mucous membrane was granular, and in several parts was destroyed by small patches of ulceration. These were quite superficial and irregular. In other parts, above the line of solution, there was arborescent injection. On microscopical examination, mucous and granule cells were observed. In the small intestine, Brunner's glands in the duodenum, and Peyer's and the solitary glands in the ileum, were very distinct. The liver and spleen were healthy; the kidneys coarse. The supra-renal capsules appeared atrophied, only 49 grains in weight, each adherent to the surrounding parts by dense fibrous tissue; the left appeared irregular from contraction. The section was pale, red, and homogeneous; and presented fibrous tissue, fat, and cells about the size of the white corpuscles of blood.

There were evident symptoms of disease of the stomach in the pyrosis, pain, and vomiting from which this man suffered. His skin was discoloured, and the prostration of strength, which was very remarkable, is a condition which Dr. Addison draws attention to in his cases of disease of the supra-renal capsule. The connection of all these symptoms may be accounted for by the fact that the pneumogastric nerve not only supplies the stomach, and joins the large sympathetic ganglia of the solar plexus, but sends a large branch to join the sympathetic nerve of the kidney and supra-renal capsule, and this nerve is of considerable size. The exhaustion, collapse, fluttering pulse, in many diseases of the abdomen, as well as from the effect of blows at the epigastrium, and the neuralgic pain in the side, with gastric irritation or ulceration, arise, no doubt, from this cause—the connection of the sympathetic with the pneumogastric and spinal nerves.

CASE XXXI. *Superficial ulceration of the stomach and duodenum. Phthisis. Ulceration of ileum, cæcum, colon, and rectum. Great intemperance.*—James M—, æt. 64, admitted into Guy's, April, 1854. For a long period, he had been exceedingly intemperate in his habits, and had become dissolute and helpless. He suffered from a slight cough, from palpitation of the heart, and, before admission, he had diarrhœa. He was very anæmiated, and gradually sank. The skin was of a dingy colour. There were several vomices at the apices of the lungs; the pleura was semi-cartilaginous, and there was ulceration of the larynx, of the ileum, cæcum, colon, and rectum. Near the pylorus there was a small ulcer in the stomach, round, about the size of a four-penny piece, excavated, but without any external thickening. In the duodenum, near the pylorus, a similar ulcer was observed, but rather larger. The liver was pale and fatty; the kidneys atrophied, their tunic adherent; the heart flabby; but, besides atheromatous deposit on the aortic and mitral valves, there was no disease. Preparation 1802⁷⁹.

The ulceration of the stomach and duodenum, in this case, was set up, probably, by the dissolute habits of the patient, and the symptoms of phthisis were obscured. The prostration, which was of a remarkable kind, was different from that of ordinary phthisis.

CASE XXXII. *Chorea. Vegetations on the mitral. Ulceration of the stomach.*—Elizabeth C—, æt. 18, admitted, March 28, into Guy's. For two weeks before death, had very severe chorea, constant jactitation, no sleep, gradual exhaustion.

Stomach.—The mucous membrane softened and partially dissolved at the greater curvature. Near the lesser curvature, were several small congested patches, in the centre of which the mucous membrane was destroyed. One of these had the appearance of a cicatrix.

On examination, the follicles were found to be full of granules, and cells containing highly refracting particles, somewhat resembling inflammatory cells. Similar cells, with mucus, were found on the surface, and the capillaries of the mucous membrane were much congested.

The mucous membrane of the small intestine was similarly congested.

CASE XXXIII. *Chronic catarrh and superficial ulceration of the stomach, with intense congestion. Disease of the heart. Small degenerated kidneys.*—Joseph S—, æt. 41, admitted into Guy's, December 13, 1854, and died January 13. He was a large stout man, by trade a gas-pipe layer. When 15 years of age, he had an attack of rheumatism; and again when he was 37 years of age; at the latter period he passed bloody urine. Two and a half years before his death, he was again seized with rheumatism. He continued at his work till five months before admission, when his dyspnœa increased, and dropsy came on. The dyspnœa was urgent, the dropsy general, the urine scanty and albuminous, and there was a bruit below the nipple and along the aorta; the pulse quick and irregular. On inspection, there was very great congestion in all organs. The aortic valves were diseased, and the kidneys degenerated.

Stomach intensely congested, the whole reddened, especially the rugæ. It was covered with patches of thick mucus, which was acid in reaction. At the cardiac extremity of the lesser curvature, was a small ulcer, about $\frac{1}{4}$ of an inch in diameter, its edges raised, and intensely congested. Near the pylorus, was a rather smaller, but similar ulcer. There were several points of actual ecchymosis. In the commencement of the duodenum were numerous minute points of ulceration, and the whole membrane was very much congested.

On examining the mucous membrane of the stomach, the follicles were found in their normal condition, but the capillaries were exceedingly distended, and were seen extending in a straight line between the follicles, and forming a close network immediately beneath the surface, apparently quite free from all cellular tissue.

CASE XXXIV. *Catarrh and superficial ulceration of the stomach. Cystic diseases of the ovary.*—Ann A—, æt. 23, admitted into Lydia Ward, October, 1854. She was a married woman, and, with the exception of ague, several years previously, had enjoyed good health, when attacks of sickness came on. Nine months ago, after one of these attacks, she experienced pain in the side, and the abdomen became swollen. The enlargement increased for five months, and she was then tapped. One and a half pint of viscid fluid was evacuated three weeks before admission. The swelling reappeared, and rapidly increased. On admission, she was very ill. There was dyspnœa, pain in the back and right leg. The bowels were constipated, the abdomen was large, and at the left side was a fluctuating tumour, but on the right it was solid. Vomiting came on, and she gradually sank.

Inspection fifty-eight hours after death.—The peritoneum contained from three to four quarts of bloody gray fluid, and contained a large cystiform tumour, formed by the right ovary. Stomach large, its rugæ reddened, and covered with a thick layer of mucus. The mucous membrane presented, especially at the lesser curvature, numerous minute ulcers: these were found to extend through it. The mucous membrane

was thin. Numerous cells, spherical, and containing highly refracting particles, were observed. The other parts of the intestine were much congested. The liver fatty.

In this case, the power of the patient was much reduced, and the abdominal tumour had exerted considerable pressure on the vessels. It appeared, however, that, for some time before death, the mucous membrane of the stomach had been in an irritated, if not inflamed condition, as indicated by the repeated attacks of vomiting, before any mechanical pressure was exerted upon the viscus.

CASE XXXV. *Superficial ulceration of the stomach. Catarrh of the colon. Cirrhosis.*—, æt. 24, a coachman, of intemperate habits, after exposure to cold, had ascites; in about six weeks, he was tapped; peritonitis came on, and he died.

On inspection, there was general peritonitis and cirrhosis. The mucous membrane of the colon was intensely congested, and covered with adherent mucus. The stomach was in some parts congested, thickened, and mammillated, and in several parts presented superficial ulcers, about the size of a sixpence, involving only the mucous membrane.

CASE XXXVI. *Superficial ulceration of the stomach. Cirrhosis. Diseased heart.*—This case was somewhat similar to the last, presenting several small ulcers near the pylorus. The patient was 64 years of age, and was admitted into Guy's, suffering from bronchitis, hypertrophy of the heart, cirrhosis, granular kidney, old pelvic cellulitis.

In the two latter cases, we find not only the congestion from cirrhosis and diseased heart, but a chronic inflammatory condition of the stomach, arising from intemperance. The first patient had been subject to occasional vomiting, &c., but considered himself well, till, after exposure and slight bronchitis, ascites came on, and was quickly fatal. It was a marked instance of the insidious character of chronic disease, and the serious effect of a slight additional disturbance to the already crippled visceral condition.

FOLLICULAR OR APHTHOUS ULCERATION OF STOMACH.

Minute points of ulceration, varying in size from one-sixteenth to one-fourth of an inch in diameter, are sometimes observed studding over the whole of the mucous membrane. They extend merely to an equal depth with it, and are situated, not only at the lesser curvature, but over the greater part of the stomach, and appear sufficiently distinct from the more common superficial ulcer to warrant separate mention.

This form of ulceration has been observed in children, with severe gastric symptoms, but more generally is found after death, where no indication of disease of the stomach has previously existed, excepting, perhaps, the vomiting of coffee-grounds substance. A drawing, in the Museum of Guy's,¹ from an infant under the care of Dr. Lever, shows the mucous membrane of the stomach intensely congested, and covered with minute points of ulceration. The microscopical

¹ Drawing No. 28675.

appearance of one of these minute ulcers presented irregular edges extending into the gastric follicles; its base consisted of the subcutaneous tissue, and on its surface were numerous cells, presenting changed secreting cells, or inflammatory granule cells. There was no proof that the disease originated in the solitary glands, but rather that it was follicular in its character. These ulcers, in some cases, arise but a short time before death, and are due, in part, to irritating secretion or food, and to the depressed state of the nervous system. They are closely allied to the gastritis folliculosa of Cruveilhier, or to what is called hemorrhagic erosion.

In some fatal cases of hemorrhage from the stomach, a minute ulcer, scarcely larger than those just described, has been found, at the base of which the branch of an artery has been observed, containing a small clot.¹ Sometimes there are seen numerous minute specks, each containing a small clot.

CASE XXXVII. *Follicular ulceration of the mucous membrane of the stomach, with renal anasarca and diseased heart.*—Susan K—, æt. 67, admitted into Guy's, in June, 1854. She had general anasarca, albuminous urine, irregular pulse, dyspnoea, and palpitation of the heart. A short time before death, vomiting of a dark-coloured fluid took place.

On inspection, coarse congested kidneys were found, with a heart weighing fifteen ounces, dilated and flaccid, and with some atheromatous deposit on the mitral and aortic valves. There were several small fibrous tumours beneath the peritoneum covering the uterus. In the stomach, above the line of gastric solution, were numerous minute ulcerations, about the size of a pin's head, studding over the whole of the membrane, and without any thickening of the submucous or muscular tissue. (See Preparation, Museum, No. 1802⁷⁵.)

CASE XXXVIII. *Follicular inflammation of stomach. Burn on the leg. Amputation. Abscess in the lungs and spleen.*—George H., æt. 15, admitted into Guy's, April 20th, and died June 23d. He had scalded the arm and leg with hot tar. The left leg was principally affected, but never disposed to heal; the nerves exposed; it was amputated, on account of his prostrate condition, and the pain he suffered.

Inspection eight hours after death.—Stump (left) sloughing, and dry bone projecting. Left arm œdematous. Lobular pneumonia of the lungs, with superficial pleurisy. The centre of lobules sloughing. In the substance of the heart, small white point resembling pus. Upper surface of spleen softened, and presenting suppurating points, the upper part hard and filled with blood. The diaphragm on both sides covered with purulent lymph.

Stomach contained coffee-grounds fluid. Near the cardiac extremity were numerous minute follicular ulcers; the gastric follicles appeared normal.

CHRONIC AND PERFORATING ULCERATION OF STOMACH.

The form of ulceration which we have next to consider has been called chronic, and, by some, perforating, ulcer. Some of the cases of the latter are not of a chronic character, and ought, perhaps, on that account, to be considered apart; many of those, however, which have been extended over considerable periods, terminate in perforation, so that we can scarcely separate the one from the other. If, however, the term perforating be meant to imply merely extension

¹ See Preparation 1801³⁰, Museum.

through the mucous into or through the muscular and peritoneal coats, where adhesions prevent sudden fatal peritonitis, there is less objection to the term.

Chronic ulceration has probably, in all cases, been preceded by some of the conditions previously described. The ulcers are situated at the lesser curvature of the stomach, sometimes towards the anterior, but more frequently towards the posterior aspect, and near the pylorus; they vary in size from half an inch to three inches, or even more, in diameter, and are round, oval, or reniform, the latter, perhaps, from the union of two ulcers. Dr. Brinton, in his investigations on Ulcer of the Stomach,¹ states that, from 191 cases, in 69 the ulcer was situated at the lesser curvature; in 55, at the anterior surface; in 11 the posterior; in 19, near the pylorus; in 10, at the cardiac extremity; and in 4, the middle: the anterior being most liable to lead to fatal perforation and peritonitis.

The edges of the ulcer are rounded and elevated. The submucous tissue is much thickened, and the centre depressed; in most instances, the disease extends through the muscular, and even the peritoneal coat. The opening in the mucous membrane is larger than that of the muscular, and the muscular than the peritoneal, so that the ulcer has a bevelled appearance on its inner aspect. If the peritoneum ulcerate or slough before adhesions have formed, a round opening, as if a punch-hole had been made, is observed to extend into the serous sac, and to have led to rapidly fatal peritonitis. If, however, adhesions take place around the ulcer, its base is formed by the adjoining viscera, such as the pancreas, or the left lobe of the liver, or the spleen. In these cases, the base of the ulcer, or cicatrix, is of a whitish colour, and consists of fibrinous effusion, and is smooth, or it has a minutely granular appearance; the edges become exceedingly firm, and are formed of dense fibrinous effusion into the mucous and submucous tissues. The perforation into the peritoneum is sometimes found at the edge of a large ulcer, which has been closed by adhesion, but has given way at the edge. The gradual ulceration occasionally leads to perforation of the coats of the adjoining vessels, either at an early stage, or when an ulcer has existed for some time. These hemorrhages are sometimes rapidly fatal, or they become checked for a time, and often recur. Dr. Brinton describes three varieties of this hemorrhage: 1st. The extension of ulceration into the minute vessels of the mucous membrane and submucous tissue, leading to a gradual discharge of blood, which becomes mixed with the secretions; 2d. Greater hemorrhage from sudden congestion of the ulcerous surface; and 3d. Very profuse bleeding from a large artery of the stomach. The perforated vessel is often seen closed by a small clot, or a drop of blood may be pressed from it, and, in large ulcers, may be sometimes seen like a small papillary eminence. This hemorrhage, however, is not limited to the gastric

¹ British and Foreign Medico-Chirurgical Review, 1856, vol. xvii.

arteries, but takes place from the arteries situated at the base of the ulcer, and belonging to adjoining viscera; thus, in one instance, Case XLVI., both the splenic artery and the pancreatic were perforated. (Preparation in the Museum of Guy's.)

Considerable contraction sometimes takes place from the adhesions of the walls of the ulcer, and the form of the stomach is quite changed. When situated in the centre, the cavity appears almost double. It is exceedingly rare in simple ulceration, even when situated at the pyloric extremity, for the whole circumference of the part to be occupied by the ulcer and its contraction; the side is irregularly puckered rather than uniformly contracted. In cancerous disease it is more common to find one or other orifice surrounded. In Case LX. the part which, on opening the stomach, was supposed to be the pylorus, was found to be a circular contraction and a large ulcer, about an inch and a half from the pylorus, and healthy mucous membrane intervened. But this was not simple ulceration; there was cancerous product in the contracted omentum at the part; it was doubtful whether the cicatrix of an ulcer had been followed by cancerous effusion in its neighbourhood. The thickening of the margins of the ulcer also encroach upon the branches of the pneumogastric, and lead to intense pain, violent vomiting, and death from exhaustion. The second case related is of this character. The ulcer sometimes, however, extends into the sac of the lesser omentum, and forms there an abscess bounded by the spleen, diaphragm, pancreas, and liver; or communicates with the colon, or even with the parietes; these, however, are generally of a cancerous character.

A remarkable case of this kind occurred in Guy's, in 1845, under Dr. Barlow's care, the full report of which, by Dr. Wilks, is found in the *Medical Gazette* for May, 1845, but I have given a brief abstract of it here. This secondary cavity, partially filled with air, had given rise to the symptoms of pneumothorax. In another case which I have here recorded, a sinuous ulcerated opening extended through the diaphragm into a sloughing cavity of the lung. A communication sometimes takes place from the colon, but this appears generally to extend from the intestine to the stomach, rather than from the latter to the former; and the ulceration in these cases is found more generally at the greater curvature. In a case which occurred in Guy's, in 1847, there was an ulcer opening from the colon into the greater curvature, and two others from the greater curvature into the sac of the lesser omentum, forming a large fecal abscess, which extended through into the lung. Dr. H. Davies narrates a case in the *Pathological Transactions*, of simple chronic ulcer extending into the colon. There had been dyspepsia and fecal vomiting, when the bowels were constipated. The patient gradually sank.

The *symptoms* of chronic ulceration are frequently only those of dyspepsia. These are, pain in the region of the stomach, sometimes very slight, but at times intense; vomiting of food; pain between

the shoulders; general abdominal uneasiness, and constipation. In many cases there is hemorrhage, either abundant or slight, and sometimes repeated vomiting; this is not always present, but is occasionally very severe.

The period at which vomiting takes place is equally varied. Sometimes the food is at once rejected, in other instances retained for many hours, or days. In the case previously alluded to, in which the thickened edge of the ulcer contained a large branch of the pneumogastric nerve, the stomach almost instantaneously rejected food, and the patient died exhausted. Fermentation and the development of the *sarcina ventriculi* of Goodsir take place in some cases of chronic ulcer, as well as in cancer and diseased pylorus. The *sarcina* can scarcely be considered as a proof of obstruction, for its development takes place without any impediment.

There is sometimes anæmia or chlorosis, with hysteria, in patients in whom no considerable hemorrhage, if any, has taken place; the pallor arising from the condition of general nutrition and of the blood. The pain is not always of the same character; it may be almost constant, or it is increased by food taken; in others it is exceedingly intense, and completely exhausts the patient. The pain between the shoulders is less severe than that at the *scrobiculus cordis*, and is sometimes of the character of severe heartburn. Unless hemorrhage takes place we cannot with any certainty diagnose ulceration of the stomach; sallowness of complexion, pain, and vomiting, all arise without ulceration in cases of *gastrodynia*, and irritability of the stomach, sympathetic or otherwise.

Hemorrhage is not in itself pathognomonic of ulceration; it often arises from over-distended capillaries, in gorged portal circulation, and in cancerous disease; though less frequent than in simple ulceration, it does occasionally arise in cancer. Disease of the *œsophagus* and aneurism sometimes produce the same symptom. In ulceration, the first hemorrhage may be fatal, or there may be repeated attacks.

Many facts of great interest have been brought forward in the valuable papers of Dr. Brinton. As to the sex, that it is twice as frequent in females as in males; the reverse being the case in cancer. In 654 cases, he found 440 were female and 214 male.

In the consideration of the age of those who are subjects of this affection, the cases of cancer which have come under my own immediate notice have been more advanced in life than those who were the subjects of ulceration of the stomach. Dr. Brinton has collected a large number of cases, and shows that the ulcer generally "affects the periods of middle and advancing life with a frequency which gradually increases up to the extreme age allotted to man." But the cases of ulcer in which *perforation* happens, "seem not only to select another period of life, but to exhibit a marked contrast of age in the different sexes, the period of life in which it is most liable to occur being quite a different epoch in the male and in the female," in the female being between the ages of 14 and 30, in the male from

50 to 60; the diminished risk of the female at the latter periods of life rendering the total risk in the same number of cases nearly equal.

The observations and researches of Drs. Crisp and Brinton, on this subject, are full of pathological and general interest. Various suggestions or hypotheses have been made in reference to these cases of perforation of the stomach in young women. They come on with very slight previous indication: neuralgia, pain in the side, and leucorrhœa or chlorosis, or it may be with scarcely any previous symptom. Generally, after a meal, intense pain comes on in the abdomen, rapid prostration and collapse. The skin becomes clammy and cold, the pulse fails; after slight reaction, the pain in the abdomen becomes more general, and tympanitic vomiting occasionally supervenes, and death in from five to twenty-four hours, or sometimes several days, and in very rare cases recovery takes place. The enfeebled nutrition, and inability of the coats of the stomach to resist the chemical action of the gastric juice, is considered by some to be the cause of this terrible result; others refer it to the state of the nervous system, and we have ample proof of the close connection of the gastric sympathetic nerve with the ovarian and uterine. The pain below the mamma, in leucorrhœa, arises, probably, from the connection of the splanchnic with the dorsal nerves. The cause is equally obscure as to the part of the stomach usually chosen for ulceration. Why the lesser curvature, either at its posterior or anterior portion, should be so generally that involved is not known. It is the least free in its movements, in fact, almost stationary, the stomach, in its general expansion, and consequent movement, turning upon its lesser curvature. This, also, is the region along which the pneumogastric nerve extends. I am not aware that this portion of the stomach is more vascular than other parts.

Abercrombie distinguishes three modes of fatal termination of this affection: 1. Gradual exhaustion; 2. Hemorrhage; and 3. Perforation into the peritoneal cavity. Another might also be mentioned: the production of inflammation by extension to adjoining viscera, as in the case related of extension through the diaphragm into the lung, and the production of acute pleurisy. The disease, however, sometimes remains in a passive condition, and the patient dies of some other disease. It is not very rare to find cicatrices in the stomach; and in those cases where there has been extensive destruction of surface, and of the muscular and peritoneal tissue, the adjoining viscera are found covered with a smooth fibrous tissue.

The duration of life after the development of symptoms of ulcer of the stomach, as compared with cancer, is generally very different. Setting aside those in which perforation into the peritoneal sac takes place, the ulcer is more curable, and extends over a longer period; it may be several years, and some have mentioned cases continuing even for twenty. I have several times observed patients in whom there were marked severe gastric symptoms: men of middle life,

with sallow complexion, with pain at the scrobiculus cordis, vomiting of food, occasional hæmatemesis, loss of flesh, &c., who have lost their symptoms under treatment and care, have regained flesh and comfortable health, and after several years had a return of symptoms. In cancer, after the well marked symptoms have occurred, vomiting, &c., added to the dyspepsia, we rarely find a year, and frequently only three or four months, before a fatal termination takes place; and it is probable that many cases of supposed cancer of the stomach, in which the patient survived for many years, were really chronic ulceration. It has yet to be shown whether the cicatrix of a chronic ulcer ever becomes the seat of cancerous deposition.

CASE XXXIX. Chronic ulceration. Death from perforation.—A man, æt. 37, had been subject to dyspepsia, constipation, and general abdominal uneasiness, but no vomiting; intense pain came on suddenly, and he died in a few hours.

In the *stomach*, an ulcer was found about the size of a five-shilling piece, circular, the edges rounded, the ulceration of the mucous membrane more extensive than that of the muscular; the base of the ulcer was formed by the pancreas and condensed cellular tissue. Quite at the upper margin, below the left lobe of the liver, there was a small perforation of the stomach, which had led to general peritonitis. The microscopic examination of the ulcer showed it to be of simple inflammatory character.

The absence of all symptoms, in this case, beyond those of ordinary dyspepsia, was very remarkable in this case.

CASE XL. Chronic ulceration of stomach, involving pneumogastric nerve. Atrophy of the left lobe of the liver.—E. S—, æt. 32, had been a widow for nine years. Four years before admission she had an attack of hæmatemesis, but her health improved, and she continued in her situation as housemaid. Two years ago, had a similar attack, and six months later, severe pain at the region of the stomach came on. This continued for a few days, and was much relieved by vomiting blood. A similar attack came on after admission. She complained of great weakness, with severe pain in the stomach, the pain extending to the back, and of a paroxysmal character; food was very quickly rejected. At the epigastrium, at first, fulness was felt, but afterwards, a distinct tumour. The vomiting was uncontrollable, but sometimes subsided for several days. Vomiting of grumous fluid then came on; the pain at last became very severe, and she gradually sank.

Inspection.—Body much emaciated; there was no marked disease about the thoracic viscera; the stomach was distended, extending nearly to the umbilicus. At the lesser curvature, and situated just at the scrobiculus cordis, the left lobe of the liver was contracted, and adherent to the stomach: it was this which had been felt during life. The stomach contained a considerable quantity of grumous fluid, and at the lesser curvature, about half an inch from the pylorus, was an ulcer two inches and a half in diameter, with raised everted edges of mucous membrane, and dense fibrous tissue; the base of the ulcer was smooth, composed of an albuminous layer, and formed by the pancreas and by the inferior surface of the left lobe of the liver. The pylorus was not hypertrophied. The remaining part of the stomach appeared healthy. On carefully dissecting the pneumogastric nerve along the lesser curvature, it was found to pass to the margin of the ulcer, and its fibres were incorporated with the dense fibrous tissue of which the raised edges of the ulcer were composed. (Fig. 1.)

The manner in which the ulcer was involved explained the speedy rejection of the food, and the intense pain from which she suffered. The attacks of hæmatemesis arose from vessels on the surface of the ulcer being opened by the extending disease. The general and microscopical characters were those of a non-carcinomatous ulcer.

The inflammatory disease had extended to the left lobe of the liver; it was small and atrophied, and its section presented several

Fig. 1.



CASE XL. Stomach presenting a chronic ulcer; at its upper margin, the pneumogastric nerve is shown extending into dense fibrous tissue. The pancreas and the left lobe of the liver formed the base of the ulcer; the latter presents fibroid degeneration of its structure.

large vessels surrounded by contractile tissue, without any intervening gland structure. It appeared that the obliteration of the vessels had led to the atrophy of the whole left lobe. This ulcer had probably existed for four years, slowly extending, and probably for considerable periods remaining passive.

CASE XLI. *Chronic ulceration of the stomach, with painter's colic. Perforation.*—George O—, æt. 28, admitted into Guy's Hospital, Feb. 22d, and died April 16th. He was a man of anæmiated appearance, dark hair, married. For ten years he had been a painter, previously a publican, and he had then drank freely. Except an attack of fever, several years ago, he was well till nine months before admission, when he had an attack of colic, which came on with vomiting, obstinate constipation, and severe griping pain at the umbilicus; from that time he lost flesh, and had constant pain in various parts of the abdomen; the bowels were constipated, and there was pain between the shoulders. A fortnight before admission, he had hæmatemesis, and was then very anæmiated, tongue pale, respiration easy; there was griping pain in the abdomen, and constipation; the abdomen was supple, and no disease could be detected on palpation. *Pil. saponis comp. gr. v 6tis horis*, was prescribed.

Feb. 29. Vomiting of grumous matter came on; an enema was administered, and electro-galvanic current used; the latter produced some uneasiness.

March 3. There was great pain, vomiting of grumous coffee-ground substance, prostration and death.

Inspection, twenty-nine hours after death.—On opening the peritoneal cavity, it was found to contain a considerable quantity of gas, and grumous matter extravasated from the stomach. Upon raising the left lobe of the liver, an opening, about the size of a pea, was observed in the lesser curvature of the stomach; the mucous membrane of the stomach was generally thickened, and about half an inch from the pylorus, near the lesser curvature, was an oval ulcer, about three inches by two in size, with raised everted edges; the floor of the ulcer was formed by the pancreas, covered by white fibrous tissue; the opening before mentioned was at the anterior part of this ulcer. The colon contained a large quantity of scybala.

There was considerable difficulty in the diagnosis of this case; the evident indication of colic, in a painter of intemperate habits, rendered the symptoms of ulceration of the stomach more than usually

obscure. The attack of hæmatemesis might have been attributed either to ulceration or congested portal circulation; but the vomiting of coffee-grounds substance is not usually observed in simple painter's colic.

CASE XLII. *Chronic ulceration of stomach, extending into the lung.*—Eliz. F—, æt. 36, had been treated as an out-patient for dyspepsia, and probable ulceration of stomach; the prominent symptom was vomiting of coffee-ground matter. After admission into the hospital she became extremely low and emaciated, and gradually sank. It was believed that she had cancerous disease. She died October 13th, and was examined twenty-six hours after death.

Chest.—The left pleura contained purulent effusion. The left inferior lobe of the lung was pneumonic, and adherent to the diaphragm; a vertical section of this lobe exhibited an excavation, filled with dark gray and tenacious matter, exhaling a gangrenous odour. The cavity was traversed by pulmonary vessels, which, when placed under water, had a curious flocculent appearance; a sinus passed from this cavity, through several fistulous openings in the diaphragm, into the stomach. The heart and pericardium were normal, but the foramen ovale was open. In the abdomen there were chronic vascular adhesions between the viscera and parietes, more particularly about the right hepatic lobe; the liver was situated unusually low in the abdomen. The small intestine appeared perfectly healthy; the kidneys were coarse, and the tunic adherent. The liver and gall-bladder were healthy.

On opening the stomach, along the greater curvature, an opening of a circular figure was discovered in its walls, the circumference of which, with the exception of a small aperture at its upper border, was very firmly adherent to the under surface of the left lobe of the liver. This appearance, the remains of old ulceration, was situated in the region of the lesser curvature of the stomach. From it a sinus passed upwards, bounded upon the left by the spleen, on the right by the left lobe of the liver, and behind by the pancreas and small omentum; above, it extended to the diaphragm, which was perforated by several foramina, and communicated with a cavity in the inferior lobe of the left lung; the surfaces of the organs bounding this sinus were tinged of a dark gray hue. The opening from the ulcer in the stomach was valvular, and was situated under the superior border. The stomach contained dark, almost black, thick viscid fluid; there was also chronic ulceration near the pyloric extremity of the stomach.

The diagnosis of this case was obscure; the earlier symptoms indicated ulceration of the stomach, but the unusual prostration led to the idea that the disease was of a cancerous character.

CASE XLIII. *Chronic ulceration of stomach, extending into the diaphragm, and simulating pneumothorax.*—Barbara —, æt. 39, a married woman, who for eighteen months had suffered from symptoms of dyspepsia or chronic gastritis, pain between the shoulders and epigastrium, and vomiting. Two days before admission she was seized with intense pain in the left side and shoulder, and had urgent dyspnoea. On examination—at the base of the left lung there was resonance, amphoric breathing, metallic tinkling, and ægophony. She died twenty days after the attack of dyspnoea.

Dr. Barlow's diagnosis was confirmed; there was pleurisy on the left side, and a large peritoneal abscess, communicating by two openings with the lesser curvature of the stomach—one near the œsophagus, capable of admitting the middle finger, and another, smaller, near the anterior wall. It was bounded by the ribs, spleen, liver, and diaphragm; and by inflammatory adhesions in a partially sloughing condition.

CASE XLIV. *Fæcal abscess, connected with stomach, lung, spleen, and transverse colon.*—Ellen R—, æt. 25, admitted July, 1847, and died August 5th. History not known, except that she had fæcal vomiting.

On inspection, the left lung was found adherent by old adhesions; there was a vomica at the upper lobe, and gray hepatization at its lower part. *Abdomen.* The intestines were matted together by old adhesions; the liver also was adherent to the stomach. On the left side was an abscess of some extent, bounded in front and to the outer side by the ribs, to the inner side by the stomach and by the spleen, below by the transverse arch of the colon, above by the diaphragm and right lung. This abscess communicated with the chest by an opening through the diaphragm, and was here bounded by the lower surface of the right lung and thickened pleura. The abscess communicated by two separate openings with the greater curvature of the stomach, and by one opening with the transverse colon; it was filled with blood, partially coagulated; and the upper portion of the spleen was found sloughing in the cavity of the abscess. The stomach, also, and the transverse colon contained each of them a considerable quantity of blood. The openings in the stomach were round holes, having tolerably smooth edges, and the mucous coat was not thickened; the peritoneal coat appeared as if it had been ruptured. There were several ulcers in the transverse colon, which communicated with the abscess, and had considerable thickening of the gut around them. The liver was large and fatty. Some of the mesenteric glands were calcareous. The contents of the pelvis were all bound together by old adhesions, and there was a considerable quantity of recent lymph. Between the rectum and the bladder was an abscess communicating with the rectum; there were several other ulcers in the rectum, and the whole mucous membrane was intensely injected and of a deep purple colour. There was strumous ulceration of the mucous membrane of the uterus.

In this case, fecal vomiting existed for some time before death; the examination, however, tends to show that the ulcer commenced in the colon, and afterwards extended into the stomach.

CASE XLV. Perforating ulcer of the stomach, with a second small chronic ulcer in the same organ.—Harriet B—, æt. 22, a single woman, a milliner, working in the city, but residing at Bethnal Green, had enjoyed good health, with the exception of occasional pain and other uneasy sensations in the gastric region, but no sickness, and she had continued at work. The bowels were generally regular. On Friday, Oct. 20th, after eating, at about 3 P. M., a full meal of anchovies and bread, she was seized with violent vomiting, followed by most intense pain, commencing in the left hypochondriac region, and gradually extending over the abdomen. When seen about 9 P. M., she was in a state of great prostration. She stated that the pain commenced by something giving way in her side. She died at 11 A. M., on the 21st, twenty hours from the commencement of the attack.

The body was well nourished. On opening the abdomen, the viscera were found distended, and covered with a coat of recent lymph, and with some castor oil, which had been administered by the friends shortly after the attack. In the stomach were two ulcers, one with raised and rounded edges, about half an inch in diameter, and extending to the muscular coat, the other about the same size, but with a smaller opening in the muscular, and a round, smooth, small punch-hole opening, perforating the peritoneal sac. Both were situated at the lesser curvature, and the latter towards the posterior part. The remaining viscera appeared healthy.

The last was peculiarly interesting: 1st. In presenting two ulcers in the stomach, but in different stages, the one resembling ordinary chronic ulcer with thickened edges, the other having the appearance of but slight action around it; 2d. In the early age of the patient (22), the presence of but slight symptoms, pain, but no sickness, although an ulcer existed in the stomach, dyspepsia was the only precursor, but she considered herself in good health, and continued at work; 3d. The sedentary employment, constrained position, and probably but scanty fare, irregular meals, uncertain hours, all tending to impair nutrition, and act as causes of this fatal malady; 4th.

Its occurrence, as is usual, after a meal; 5. The pain commencing at the hypochondriac region, but this is not always the case, and we cannot thereby ascertain at all times the seat of perforation.

CASE XLVI. *Chronic ulceration of the stomach. Fatal hemorrhage. Perforation of splenic and of pancreatic arteries.*—Charlotte T—, æt. 55, admitted March 4, 1857, into Guy's, under Dr. Wilks' care, and died March 5th, at 9.40 P. M.

She was previously admitted under Dr. Oldham's care, in a very blanched condition, ill and anæmiated; she complained of severe pain in the left side; stated that she had had no vomiting or spitting of blood, but her appetite failed; whilst in the hospital, however, she took food well. She was, in a week's time, transferred to Dr. Wilks' care, and was then evidently suffering from internal hemorrhage; she had great pain and uneasiness in the left side; she was disposed to vomit, but did not do so. During the night, she vomited a cupful of blood, and shortly afterwards died. She was a char-woman, and of intemperate habits. Six years before death, she had vomited blood.

On inspection, the pleura was found adherent, the lungs healthy. The left ventricle was contracted and empty, as in death from loss of blood.

In the abdomen, the peritoneum was healthy, except adhesion at the upper part, where the anterior wall was firmly united to the stomach and liver; it could be separated with care, except over the left hypochondriac region, here it was exceedingly firm. The whole of the liver, stomach, and spleen, were removed together; the stomach was found to be contracted at its centre by a large oval ulcer placed transversely; two pouches were formed, the pyloric being the smaller of the two, and the cardiac one containing a large pouch, capable of holding at least a quart of fluid; each part contained a large quantity of coagulated blood, partly digested. At the posterior part of the stomach, near the lesser curvature, was a large chronic ulcer, with raised dense rounded edges, and depressed slightly granular centre; it was oval, or rather reniform in shape, and appeared to be formed of two ulcers which had coalesced; it was at least three inches in length, and one and a half to three in breadth. Its floor was formed partly by the left lobe of the liver, which was firmly adherent, and by the pancreas. Two small papilliform eminences were found, on careful examination, and a bristle could easily be passed into open vessels; one was found to communicate directly with the splenic artery, on the upper margin of the pancreas, and a second entered the artery in the centre of the pancreas. Each of these vessels had a small quantity of blood at their orifices, but did not contain any clot or blood. The pylorus and the rest of the stomach were healthy. The intestines contained a considerable quantity of blood, but were otherwise healthy. The portion of the left lobe of the liver was atrophied, and presented fibroid degeneration; the other part of the liver fatty. The kidneys were granular and degenerated.

This case presents us with an unusual mode of termination of gastric ulcer. The ulceration had been slow in its progress, apparently extending over six years, or more: at that time there was some hemorrhage, which probably came from some of the branches of the gastric arteries; the ulceration, however, extended, but adhesions prevented peritonitis. In this state her health became impaired by disease of the kidneys, which were found after death in advanced degeneration; slow ulceration extended into the vessels at the base of the ulcer, and two large vessels led to the fatal hemorrhage. These vessels were apparently not atheromatous; the disease of the kidneys, and the condition of the blood tended to increase the hemorrhage. It is remarkable that so little blood was vomited, although the stomach was full, and the intestines contained a considerable quantity. The absence of this symptom arose partly, perhaps, from the adhesions of the stomach to the parietes, and from the prostrate condition of the patient.

As to the cause, we are led to suppose that the intemperate habits of the patient produced the disease of the stomach, and also that of the kidneys; the one tending to increase the other, and at last hastened a fatal termination.

CASE XLVII. *Ulceration of stomach. Fatal hemorrhage.*—Joseph G——, æt. 53, admitted into Guy's, February 28th, and died March 6th.

This patient was admitted after hæmatemesis had taken place; it came on suddenly, and there were no premonitory symptoms; he died on the sixth day, completely blanched.

On inspection, forty hours after death, a small ulcer about the size of a fourpenny piece, was found at the lesser curvature of the stomach; it was round, depressed in the centre, and the edges of the mucous membrane raised; in its centre was an opening from which exuded a drop of blood, and a probe could be passed into a large vessel beneath, apparently gastric. The stomach only could be examined, and a full inspection could not be made. The stomach was of normal size, and free from blood; the large intestines dark from blood within them.

Causes.—There is much obscurity as to this subject. Some cases appear to be preceded by a state of chronic inflammation of the whole mucous membrane, produced by intemperance or irregularity in diet. In others it appears probable that the general state of nutrition and of the nervous system act as predisposing causes. Mental depression or anxiety, scanty food, late hours at night, and insufficient exercise, pressure upon the scrobiculus cordis, either by direct girthing of the abdomen, or by constant constrained position, as in milliners or shoemakers, or the striking of the epigastrium by the shuttle of the weaver, appear to produce it.

Treatment.—One of the most important considerations in this as in other affections of the stomach, is the proper administration of food. An ulcerated surface exists, which in most cases would probably quickly heal, if absolute rest could be attained, but this is exceedingly difficult, if not impossible. Next to that it is obviously most desirable to administer food which will nourish the body, so that healing may be favoured, but without irritating and disturbing the process which is going on towards recovery. The difficulty is still more increased by the occasional irritability of the stomach itself. Milk, arrowroot, small quantities of well-masticated animal food, of an easily digestible character, may be taken—mutton, beef, or fowl, freshly cooked and warm; but where the patient is not much anæmiated, the demulcent forms of food are much to be preferred—as blanc-mange, egg puddings, rice, or food which will quickly pass from the stomach, but be still sufficiently nutritious. It is better to avoid alcoholic liquors if possible, they tend to aggravate the disease, and should not, I think, be given, unless the circulation be failing, and there be tendency to syncope, &c.

Rich soups, highly seasoned dishes, are better abstained from; so also pastries, and food containing much insoluble material, as salads, &c. It is, however, undesirable altogether to abstain from vegetables, in that way we may defeat our object, by inducing cachexia; oranges, lemons, &c., may be taken often with benefit. The stomach

should never, however, be distended by a large meal, or by substances likely to induce flatulence; and exertion should be entirely avoided after food has been taken.

If food can be properly regulated, medicine *may often with advantage be altogether omitted*; but various symptoms may arise to which medicinal agents may afford relief, and others may remove conditions which retard the curative process. If there be great irritability of the stomach, bismuth, and conium, with or without hydrocyanic acid, opium or morphia, creasote, alkalies, the solution of potash, or ordinary soda water, or lime water, given with small quantities of milk, or nitrate or oxide of silver, are of service.

Dr. Jenner has pointed out the value of the sulphite of soda in checking the fermentative action, and the development of sarcinæ in obstruction from chronic ulcer, as in cancerous or pyloric disease. It may be given in ℞j doses, alone or conjoined with other agents.

If there be excessive secretion or hemorrhage, astringents may be given; mineral acids, as the sulphuric alone, or with Epsom salts, acetate of lead, tannin, or alum—where we have hemorrhage without great irritability, small doses of turpentine with mucilage or yolk of egg, but this is a remedy in which I have little experience; I have sometimes observed it to aggravate the symptoms, besides being very offensive to the patient.

The bowels should be acted upon either by agents which are not retained in the stomach, or irritating to it, as the aloes or colocynth pill, with henbane; the compound rhubarb pill, the carbonate or Dunneford's fluid magnesia; in other instances enemata are better, of simple water or castor oil, or of turpentine.

Counter irritants are often of service in these cases. A small blister applied to the scrobiculus cordis, or the croton oil rubbed in so as to produce pustular eruption. Some even use a seton; but I think that milder remedies may attain the same beneficial result with less suffering and distress to the patient.

It is desirable to use every means to improve the health, by exercise in the open air; but over fatigue, or constrained positions, should be avoided. Moderate horse exercise, and bracing air, will sometimes afford more relief than medicinal agents, even when long continued.

Where there is anæmia the milder preparations of steel are required, as the ammonio-tartrate or citrate, the compound steel pill, with aloes and myrrh, or quinine with iron, &c.

Where perforation has taken place, and the symptoms of peritonitis suddenly produced, there is a slight chance that life even then may be prolonged: the patient should not be moved, and nothing introduced into the stomach or mouth, except a teaspoonful of water, or milk, to assuage thirst. Opium must be given freely, so that the patient may be entirely under its influence—a grain every three or four hours—by this means peristaltic action is checked, and adhesions may take place, and life be preserved. For many

days aperient remedies should be avoided, and food only taken in the most cautious manner.

A most interesting and rare case of recovery after apparent perforation, is recorded by Dr. Hughes and Mr. Hilton, in the *Guy's Reports*. The plan adopted was the one I have mentioned. The young woman left the hospital, and appeared convalescent; subsequent indiscretion in diet produced a return of the symptoms, and a fatal result. A cicatrix of previous ulcer and adhesion was found, but with new perforation.

CASE XLVIII. *Chronic ulceration, with villous growth. Stomach exceedingly contracted, simulating cancer.*—Thomas F——, æt. 34 years, a married man, who resided at Dover, and followed the occupation of a fruiterer. He was admitted into *Guy's*, June 30th, 1854, under my care, in the Clinical Ward, pale and exceedingly emaciated. With the exception of an attack of rheumatism fifteen years ago, his health had been good till eight months before admission. He stated that eight months ago he took cold, and experienced pain in the chest, at the lower part of the sternum, accompanied with difficulty of deglutition. He obtained no relief, but the pain gradually increased in severity, and was accompanied with vomiting after food; his food was brought up directly after being swallowed—his own description being that it never seemed to reach the stomach but was brought up unchanged; the vomiting sometimes subsided for several days, and he was thus able occasionally to retain fluid food; if the food remained, he experienced relief to the painful exhaustion which he felt. Emaciation had slowly increased. On admission his exhaustion appeared extreme, but still he experienced no pain; the abdomen collapsed; no tumour could be felt; the distress on swallowing was localized at the lower part of the sternum. At the base of the right lung there was dulness on percussion, and some tubular breathing; but no cough or dyspnoea. He sank on the fourth day.

Inspection.—The lower lobe of the right lung was consolidated, granular, and very readily broke down. The heart was healthy. The peritoneum also was healthy. The stomach was so small and concealed that it was not at first perceived; it was exceedingly contracted and lobulated externally, resembling a portion of large intestine; it was about six inches in length and two in breadth. On laying it open, from the œsophageal to the pyloric orifice, it presented a very unusual appearance. At the pylorus, and extending along the greater curvature, was a deep excavation or ulcer, bounded by a sharp, slightly ulcerated border, the surface smooth, and of a grayish colour. This ulcerated surface extended about half an inch beyond the pylorus; passing towards the cardiac extremity and along the lesser curvature, the mucous membrane appeared smooth, shining, and glazed; and towards the cardiac extremity presented several raised, circular patches; the largest of these, very near to the ulcer, was about one-eighth of an inch in elevation, and about one inch in diameter, and composed of villous folds, which appeared to radiate from the centre; floated under water, this growth from the mucous membrane had a very beautiful appearance; nearer to the œsophagus was another circular patch of a similar description; and on either side, slight folds, having a longitudinal arrangement, but less elevated. On taking a small portion of this villous growth, it was found to consist of very delicate plicated folds; scarcely any epithelium was found on the surface, but numerous crystals, resembling triple-phosphates, were observed upon it; the growth was composed of cells of large size, from $\frac{1}{2000}$ th to $\frac{1}{1500}$ th of an inch in size, many oval, some angular; they contained granules, and large nuclei from the $\frac{1}{4000}$ th to $\frac{1}{2000}$ th of an inch. These cells were very similar to those found on the mucous membrane of a healthy stomach, or in connection with the gastric follicles; and though they bore some resemblance to the cells observed in epithelial cancer, they were, I doubt not, merely changed secreting cells of the gastric follicles. A section of the growth rendered this more probable; immediately beneath the surface of the mucous membrane was a thick layer of these secreting cells, reaching to distended gastric follicles, which were lobulated and much distended by similar cells; beyond these enormously enlarged gastric follicles was a stratum of white fibrous tissue, from one-sixteenth to one-eighth of an inch in thickness, and similar tissue extended between the follicles themselves.

All the growths from the membrane had a like structure. On the surface of the apparently smooth portion were several small isolated dendritic or imperfect villi, containing cells, as before described. Beneath the mucous membrane was a dense fibrous layer, and then hypertrophied muscular fibre. The hypertrophy of the muscular fibre was more marked towards the pylorus, but even there did not exist in an extreme degree. The examination of the ulcerated surface did not show any structure which indicated the disease to be of a carcinomatous character. The liver, pancreas, and the remaining abdominal viscera and glands, were healthy. One kidney was large and healthy; the other appeared atrophied. (See Figs. 2 and 3.)

Fig. 2.

Fig. 3.



CASE XLVIII. Stomach exceedingly contracted from chronic ulceration, with villous growth. Simulating cancer.

Fig. 2. External view, resembling colon in appearance.

Fig. 3. Internal surface, showing ulceration near the pylorus, and villous growth near the centre of the stomach.

The pathology of the case just detailed is of great interest; it could not be ascertained that he had taken any poisonous or corrosive substance; but he denied it during life. There had apparently been inflammation of the mucous and submucous tissues, leading to very slow ulceration in one part, in another to the development of contractile tissue in the substance of the membrane, and producing contraction of the whole organ. The villous growths at first gave the idea of epithelial cancer; but the presence of gland follicles in their normal arrangement, though much hypertrophied, and the absence of every other indication of cancer, lead me to the belief that these parts are merely portions of changed or hypertrophied mucous membrane. There was no glandular enlargement or disease resembling carcinoma in any part of the body. The disease during life was believed to be carcinomatous, and located at the cardiac extremity of the stomach; the manner in which the food was at once regurgitated or rejected from the stomach, the unrelieved pain, and steady emaciation, seemed to warrant such a supposition. The acute disease at the base of the right lung was interesting, as illustrating the manner in which such disease in an exhausted subject may take place without general symptoms. There was no cough, dyspnoea, or febrile symptoms; the pulse was quiet, and the tongue clean; still there was dulness and tubular breathing at that part, and the lung was found, on inspection, in the second stage of pneumonia.

DIPHTHERITIC INFLAMMATION OF STOMACH.

Acute inflammation of mucous membranes manifests itself by alteration in the secretion and condition of all the parts composing them. The capillaries and the blood within them, the formation of epithelium or mucus or of other secretions, is modified, and the whole vital condition of the part deviates from the healthy state. "The more the conditions of nutrition deviate from what is normal, the more will the material effused from the vessels deviate from the normal type."¹ This is observed in ordinary catarrh or bronchitis, compared with the effusion of false membrane in croup or laryngitis. The membrane becomes intensely red from congestion of its capillaries, swollen from effusion of serum into its tissue, hot and more highly sensitive, and its secretion changed. If the disease be slight, the mucus may be apparently altered, though often more in quantity than in quality, or its cells are found to be exceedingly abundant, imperfect in their formation, or merely nuclei are produced. In croupous inflammation, the secretion consists of a blastema, with greater or less tendency to fibrillate, containing granules, nuclei, or variously formed cells. It is more or less adherent to the membrane beneath, though not incorporated with it. The larynx and trachea

¹ Paget, "Surgical Path.," vol. i.

are most frequently the subject of this disease, or perhaps still more, the mucous membrane of the mouth, pharynx, and nasal passages.

The term diphtheritic inflammation was applied by Bretonneau to a form of acute inflammation of the mouth and pharynx, accompanied with the effusion of a grayish false membrane in small lenticular or diffused patches, which was followed by superficial or deeper ulceration, and the disease extended to the nasal mucous membrane.

The stomach is less prone to acute inflammatory disease than either the small or large intestine, and we rarely have an opportunity of observing acute gastritis except as the result of irritant poisons. Croupous or diphtheritic inflammation is still more rare, and the following case, although in many respects imperfect, is of considerable interest; the symptoms of disease of the stomach were not clearly marked, but the patient was exhausted, and suffering from advanced syphilitic necrosis of the bones of the nose, and also the subject of degenerated disease of the kidneys.

CASE XLIX. Syphilis. Diphtheritic inflammation of the stomach. Diseased kidneys. Necrosis of the bones of the nose.—Ann Owen, æt. 47, was admitted under Mr. Poland's care, Nov. 22d, 1854, and died March 30th. She had had syphilis many years previously, for which she had taken mercury. She was admitted with necrosis of the bones of the nose, and in a state of general cachexia. In this condition she continued till a short time before death, when she appeared more exhausted, and puffiness of the hands and face came on. She appeared to die from exhaustion.

Inspection fourteen hours after death.—The whole of the soft parts and bones of the nose were destroyed, as well as the palate. In the brain there was serous effusion. The lungs and heart were healthy. The liver was fatty, nodulated, and contained small lardaceous masses. The spleen was firm and waxy, and contained lardaceous masses; its weight, 6 oz. The kidneys were much degenerated, presenting white deposit in the secreting structure, and the tubes containing fat.

The stomach presented a very remarkable appearance; it was of normal size. The mucous membrane was intensely congested; in numerous parts were small patches of thin yellowish lymph-like substance, very adherent, and composed of mucous cells, granules, granule cells, and some secreting cells. Other parts of the mucous membrane were covered with tenacious mucus. There was intense congestion of the capillaries of the mucous membrane, the follicles of which were distended with granules and with secreting cells. The visceral disease of this woman arising from a dissolute life, and a constitution impaired by syphilis and mercury, were the predisposing causes of this disease of the stomach, excited in part by the exceedingly severe necrosis of the face.

SUPPURATION IN THE COATS OF THE STOMACH.

Local suppuration in the walls of the stomach is an exceedingly rare occurrence. The history of the following case is imperfect in its details, but is sufficient to show the general character and symptoms of such disease. It is doubtful, but probable, that the case was one of pyæmia.

CASE L. Elizabeth T—, æt. 40, was admitted May 2d, 1847, into Guy's Hospital. She was a married woman, a nurse. For a fortnight she had suffered from pain in the limbs and back, and for a few days, in the stomach and chest. The abdominal tenderness subsequently increased much. She had anorexia, and constant vomiting of a dark-coloured bitter fluid, with intense thirst. Her death was preceded with restlessness and stupor.

Inspection twenty-four hours after death.—The body was tolerably nourished. The peritoneal cavity contained a quantity of yellow opaque puriform secretion of uniform consistence, but very offensive. At the pyloric third of the greater curvature of the stomach was a firm mass, measuring four and a half inches by three and a half. On opening the stomach, a small quantity of greenish fluid escaped. The mucous membrane was dotted over its surface with points of ecchymosis. An irregular dark brown patch, about the size of a shilling, was found near the pylorus, corresponding with the centre of the thickened mass. When the peritoneal and muscular coats were divided, there was found to be a collection of pus between the fibres of the submucous cellular tissue. The pus was not liquid. The intestines were distended with gas, but no disease could be found in the mucous membrane, except a small polypus in the rectum. The liver was dark, congested, and lacerable. Spleen and kidneys congested. The uterus full of menstrual blood. Preparation 1802⁶⁵.

SLOUGHING OF THE MUCOUS MEMBRANE OF THE STOMACH.

It is generally only after the administration of caustic poisons that the stomach is found in a state of slough. In the small or large intestine, hernia or intussusception is its common cause.

In the two following cases the appearance was very different from that of a clot of blood covering over an ulcer. At the lesser curvature of the stomach were several black patches, the largest about one inch in length; and other smaller ones were placed in the same direction along the lesser curvature. The black central portion could not be removed from the tissue beneath; but, on section, it was found that a sort of cup had been formed of fibrous tissue surrounding the base, and on either side of the slough, showing either that an inflammatory condition had preceded the loss of vitality in this isolated portion of membrane, or that, having sloughed, this new action had been set up around it. The appearance presented was very similar to an ordinary bed-sore on the sacrum. A slight, unusual irritation, with depressed vital power, appeared sufficient to cause total loss of vitality.

These cases confirm the opinion expressed by Dr. Copland, and are in accordance with the experiments of others, that the condition of the nervous system has an important influence on the power of the stomach to resist the chemical action of the gastric juice. In both cases there was an acute pneumonia; in the one, with renal anasarca, in the other, with paraplegia. The action of the pneumogastric nerve on the healthy nutrition of the lung is well established; but experiments have shown that the division of that nerve does not induce similar changes in the stomach. In these cases there was some other cause for the ulcerated and sloughing condition of the stomach.

CASE L*. *Ulceration of the stomach; sloughing, paraplegia. Softening of spinal cord. Disease of vertebra.*—Elizabeth G—, æt. 33, admitted February 23d, 1855.

She had been ill for six weeks with paraplegia. Sloughing came on, on the hips, &c., and she gradually sank.

Inspection thirty-six hours after death.—Opposito the eleventh dorsal vertebra the cord was quite diffuent; and this softening, though in rather less degree, extended to the upper part of the dorsal region. The softening was more marked upon the posterior column. *Chest.* Bronchi congested, and full of tenacious mucus; lower lobes in a state of red hepatization, red, fleshy, and very soft. The mitral valve thickened. *Abdomen.* Omentum attached to the bladder; the stomach vertical, and distended, pulled down to the pelvis, and occupying half the abdomen. *Stomach.* Much enlarged, containing grumous fluid; its greater curvature presented post-mortem solution. The mucous membrane was partially destroyed. Above the line of solution there were several ulcers. The mucous membrane at the margin pale and slightly raised. The floor of the ulcer covered by a black slough. The ulcers about the size of a shilling piece. The intestines much congested. Liver very fatty. Spleen healthy. Bladder sloughing, so also the vagina and os uteri, so that there was free communication between them. Uterus contained a decomposing fœtus of about two months.

CASE LI. Mottled kidney. Anasarca. Pneumonia. Sloughing mucous membrane of stomach.—Stephen F—, æt. 51, admitted April 10th, and died April 20th, 1855, from chest disease. Nine years before he had scarlet fever, and for the last eighteen months he had not been well. On admission the urine was very albuminous.

Inspection fourteen hours after death.—The body was generally anasarca. The lower lobe of the left lung was red, consolidated and almost breaking down. The rest of the lung very œdematous. The bronchi full of frothy mucus. The left ventricle much hypertrophied. Weight of the heart 17 oz. At the lesser curvature of the stomach were several sloughs; the largest two inches in length, and about one in breadth, black, and slightly raised; a section showed that the slough was situated in a sort of cup of slightly thickened tissue. Two smaller sloughs were situated near to it. On microscopic examination of the adjoining portions of mucous membrane, the gland follicles were not distinct; and on the surface were columnar epithelium and crystals, &c. The small intestines were healthy. Spleen small, firm, lardaceous. Kidneys mottled. The Malpighian bodies degenerated and lardaceous.

FIBROID DEGENERATION OF PYLORUS.

This state has by some been considered as cancerous disease, by others as hypertrophy of the normal constituents of the part.

If, however, we carefully examine the diseased structure, there is no evidence of cancer either in it, or in other parts; but, we find more than mere hypertrophy of the muscular layer. The disease apparently commences in the submucous cellular tissue, which undergoes fibrous thickening, the mucous coat being in many cases unacted upon. This state, however, leads to obstruction at the valve; the muscular coat then becomes hypertrophied, and is an indication of the degree of obstruction.

The growth beneath the mucous membrane is whitish in colour, firm, without any juice, as in cancer, sometimes cartilaginous in firmness; it consists of elongated or wavy fibres, resembling a fibroid tumour, and with acetic acid presents numerous elongated nuclei; bands of similar tissue pass between portions of involuntary muscular fibre; and externally we may find the omentum contracted and adhesions formed with adjoining structures.

The symptoms closely resemble those of cancerous obstruction; there is the emaciation, vomiting several hours after food, distension of the stomach, eructation, fermentation, and the development of

sarcina ventriculi, constipation and gradual exhaustion, till at last the patient sinks from inanition; a tumour is often felt at the part, consisting of the thickened tissues at the pylorus. In some cases we find evidence of chronic inflammation, the mucous membrane being gray and thickened, or we find chronic ulcer or cicatrix.

The mucous membrane at the pylorus may appear quite healthy, having ordinary gastric follicles distinct, or hypertrophied; or the irritation at the part has excited inflammation and ulceration; but this condition is secondary.

We are not acquainted with the predisposing or with the exciting causes of this condition; but it is probable that long-continued irritation, as indicated by dyspepsia, generally precedes it. The intemperate do not appear to be more liable, and one sex is equally the subject of it as another, and it occurs in early and middle as well as in advanced life.

As to treatment, we can afford relief, but cannot remove the obstruction. The change from solid and irritating food to fluid and unirritating is often followed by much benefit; and we may use those agents and means which have been recommended in chronic ulceration of the stomach.

CASE LII. *Thickened pylorus. Cicatrix of mucous membrane, with hypertrophy.*—G. —, a silk weaver, æt. 62, was admitted in a prostrate anæmic condition. He had had hemorrhoids for twenty years, and had occasionally lost a considerable quantity of blood. Four months before admission, he had violent pain from the hip to the foot, and his legs swelled. Violent pain also came on in the region of the stomach. Diarrhœa followed, and continued repeatedly till death.

On inspection, the heart was found to be fatty, the colon and cæcum ulcerated. The stomach was somewhat enlarged, its mucous membrane pale; at the greater curvature, over a space about two inches in circumference, the mucous membrane was thickened, and appeared a little puckered, and at the upper border of this patch was a small growth, consisting of thickened, prominent, mucous membrane, about one-eighth of an inch above the remaining part. On examining the raised portion, it was found to consist of columnar epithelium on the surface, and beneath of cell-structure. The nuclei of the cells were very distinct, and gave the idea of cancer, but they were nearly identical with the secreting cells ordinarily observed in a healthy organ. The pylorus was much thickened, and consisted of dense fibrous tissue, passing between bundles of involuntary muscular fibre. There were no true cancerous structures, and the diseased condition of the pylorus apparently arose from fibroid degeneration of the submucous and submuscular tissues, followed by hypertrophy of the muscular coat. (See Drawing, in Museum, No. 298⁵⁰, Prep. 1806⁷⁵.)

This fibroid degeneration, with hypertrophy, contrasted remarkably with true scirrhus disease. It had not led to the ordinary symptoms of obstructed pylorus in a marked degree, the cause of death being diarrhœa in an anæmiated subject.

CASE LIII. *Diseased pylorus. Phthisis.*—Mary W. —, æt. 22, admitted into Guy's in December, 1856. She stated that she worked at the fur trade, and was always stooping; three years ago vomiting came on, preceded by pain across the chest; the symptoms, however, were much relieved, and she married; in a short time she became pregnant, and the symptoms returned; they were, however, thought lightly of. After her confinement she nursed for 7 months; for four months after admission she had constant vomiting, which came on several hours after taking food; she suffered from constipation, and gradually emaciated.

On admission into Guy's she was exceedingly wasted; had a strumous appearance; her complexion dark, and she anæmiated; she suffered from flatulent distension of the stomach, which was easily dispersed, and complained of burning pain at that part; the vomiting often came on about six o'clock in the evening; on examination of the abdomen a prominent tumour could be felt at the region of the pylorus; a short time before admission she had slight hæmoptysis, but there was no evidence of disease of the chest at that time. The vomiting after food and emaciation continued, and medicine afforded very temporary relief; a few weeks before death cough came on and expectoration; she died March 10th; her death had been expected week after week, but still she lingered on, and at last emaciation became extreme.

Inspection was made March 12th. On opening the abdomen scarcely anything could be seen, but the stomach enormously distended; the pylorus was depressed somewhat, but the greater curvature reached nearly to the pubes. The tumour consisted of the diseased pylorus. The interior of the stomach presented a growth at the pylorus, which surrounded the viscus completely, so that the little finger could not pass; it extended nearly two inches into the stomach; the disease was of the character which has been described as hypertrophy, and was manifested in a very marked degree. The semi-transparent muscular layer was more than a quarter of an inch in thickness, and traversed by delicate lines; upon it was placed a very dense whitish substance, nearly half an inch in thickness, firm and tough in texture, and with difficulty cut; on pressure no juice exuded; upon this again was thickened mucous membrane; the surface not ulcerated, but whitish in colour, and irregularly tuberculated. The disease did not terminate so abruptly in the duodenum as we often find, but gradually subsided to the natural thickness of the intestine. The duodenum was healthy; so also the mucous membrane of the rest of the stomach. The intestines, liver, kidney, and glands were healthy.

On microscopical examination, the non-malignant character of the growth was well shown. The mucous membrane at the pylorus covering it was thickened, but presented normal structure; the gastric follicles were beautifully distinct, elongated, and filled with nuclei, apparently quite healthy. The white submucous substance was composed of dense fibre, and with acetic acid presented elongated nuclei, arranged as in fibrous tissue; there was no evidence of cancerous deposit. The muscular tissue had the usual involuntary fibre, but firmer bands intersected it. There was no cancerous disease in any part of the body. At both apices of the lungs there was disorganization; there were several small vomices filled with pus, surrounded by iron gray pneumonia, and some white granular deposit, resembling tubercles; but no cancerous disease could be found on microscopical examination.

The disease apparently commenced in the submucous cellular tissue, and consisted of abnormal development of the ordinary fibrous tissue, and closely resembled the fibrous growths of other parts.

The hypertrophy of the muscular and mucous coats were probable secondary, and the result of the obstruction.

The history of the case, the disappearance of the symptoms, and their recurrence after an interval of more than two years, are more allied to fibrous degeneration than to cancer.

The occurrence of phthisis with the diseased pylorus is rare; she was a strumous subject, and in the exhaustion consequent on the disease of the stomach, pneumonia of that character was set up.

The age of the patient was younger than that in which we generally find this disease—only twenty-two; and it is doubtful how far her employment conduced to produce the disease.

Polypoid growth.—The mucous membrane of the stomach not unfrequently presents polypi attached to the surface; several of these which I have examined have presented the structures of healthy mucous membrane, and had not produced any symptoms; sometimes

smaller growths of this character appear incorporated together, and closely resemble the appearance of commencing carcinoma; it would seem that a cicatrix or some irritating cause has induced in some cases these growths.

CANCER OF THE STOMACH.

The stomach is one of the organs most frequently affected with cancer, and presents a remarkable contrast with the rarity of strumous disease of this organ. Every form of cancer is observed in the stomach, but medullary and scirrhus cancer are the most frequent; epithelial, villous, colloid, and melanoid cancer, being more rare. It is seen, however, that these varieties frequently pass into one another, and thus while one part has almost the firmness and structure of scirrhus, another is medullary. The surface also of a medullary cancer may have the appearance of a villous growth. The disease originates in the mucous membrane of the stomach, or its submucous tissue, or is propagated to it by the affection of the glands in the neighbourhood of the pancreas; and the pylorus, cardiac extremity, and lesser curvature, are the parts generally affected. The ordinary characters of the forms of cancer are so well described by Professor Paget, in his "Surgical Pathology," and by other writers, that I shall not describe them. The cases I have briefly given show the general character of the structures found in them.

The first case is one in which scirrhus disease was well marked; but cells closely resembling those of epithelial cancer were observed. The second and third cases were medullary; but the surface of the growths having a villous character, lead me to believe them to be almost of an intermediate type. The fourth and fifth were cases of colloid cancer, the one with similar disease of the ascending colon, the other of the omentum, peritoneum, and rectum; in both the mucous membrane of the stomach was primarily affected.

We are not acquainted with the determining cause of the form of cancer, or whether the opinion, which is maintained by some pathologists, can be established, that scirrhus is connected, in its origin, with the fibrous tissues of the part; medullary with the mucous surface or gland structure, and colloid especially with the latter; or whether they are rather indications of the intensity of the morbid action. The part affected has a modifying influence on the character of the disease: the epithelial cancer of a surface covered by squamous epithelium is different from the same disease, where the epithelium is columnar; an instance of differentiation as applied to morbid changes.

The *symptoms* of cancerous disease of the stomach, where a tumour cannot be detected on manipulation of the abdomen, are often exceedingly obscure, especially in the earlier stages of the disease. The first symptoms are those of dyspepsia; pain at the stomach may be entirely absent, or there may be severe gastrodynia. In the

second stage of this disease, vomiting is generally the most prominent symptom, especially where the disease is situated at the pylorus, coming on either a short time or several hours after a meal. The vomited matters are often frothy and fermenting, and present us with the *sarcina ventriculi*: the vomiting in cancer sometimes ceases from the destruction of the pneumogastric nerve, and the cessation of the consequent irritation. On careful manipulation, a tumour may often be felt at the region of the stomach or pylorus. The bowels become constipated; flatulence and eructations are often present; the patient gradually emaciates, and the countenance becomes haggard and cachectic. These symptoms become more and more severe, and the emaciation extreme. It will be found that these symptoms are very similar to those observed in chronic ulceration, which also is preceded by dyspepsia, and in which sometimes a tumour may be felt. The pain, however, is often more intense than that of cancer, and the vomiting exceedingly severe. This was observed in the case of chronic ulcer of the stomach which I have recorded, in which the pneumogastric nerve was involved. The emaciation in both may be gradual, progressive, and extreme. Both diseases may occur at the same age, but it is more common to find chronic ulceration at an earlier period than cancer. This is shown by contrasting the ages of the six cases of chronic ulcer of the stomach with those of cancerous disease of the same organ; the former were at the ages of 37, 32, 28, 36, 39, 25, the average being 32; the latter were 40, 62, 65, 37, 47, the average 50. From 35 to 55 years is the age at which we are most likely to have cancerous disease of other organs, and the law holds good with the stomach. The age will in some measure assist us in the diagnosis even at the later stages, but still more in the earlier; for the varied forms of dyspepsia, gastrodynia, pyrosis, &c., are very frequent at a period long antecedent to the age at which cancer generally manifests itself; dyspepsia being exceedingly common among young females, whilst cancer is almost unknown.

The investigations of Dr. Brinton,¹ on this subject, are very interesting and important; he has collected, from varied sources, a considerable number of cases of cancerous disease of the stomach; he thus shows that males are more subject to the disease than females, in the proportion of 2 to 1; from 223 cases, 151 were males, and 72 were females; as to the age of those affected, the period does not coincide with those which have come under my own observation as compared with ulceration of the stomach; the following table is also from his researches:—

Liability to cancer and ulceration of the stomach.

Age	0—10	10—20	20—30	30—40	40—50	50—60	60—70	70—80	80—90
<i>Cancer</i>		$\frac{1}{4}$.	11 $\frac{3}{4}$.	31 $\frac{3}{4}$.	63.	83.	100.	52 $\frac{1}{2}$.	60.
<i>Ulcer</i>		20.	51.	49.	47.	56.	80.	75.	100.

¹ Med. Chirur. Review, op. cit.

The average age of those affected with cancer, he mentions to be 51 in the male, and $40\frac{1}{2}$ in the female; and in reference to the position, the well known fact that whilst the pyloric portion is the most frequent seat of cancer, the lesser curvature and posterior surface are the positions of ulcer, he shows in the following proportions:—

Position.—In 360 cases.

Cancer.—219 Pylorus. 38 Lesser Curv. 36 Cardia. 13 Stomach generally. 11 Greater Curv. 11 Posterior Surface. 11 Anterior Surface. 4 Middle.

Ulcer.—52 Pylorus. 98 Lesser Curv. 5 Cardia. 0 Stomach generally. 8 Greater Curv. 177 Posterior Surface. 18 Anterior Surface. 0 Middle.

Vomiting of blood is more frequently observed in ulceration of the stomach than in cancer, excepting the coffee-ground substance of the last stage, which arises from altered blood. The former disease extends over a longer period of time: in cancer, three to six or twelve months, or it may be two years perhaps at the longest; but in ulceration the disease will, not very rarely, be found to continue three, four, or even seven years, with varied accessions of severe symptoms. Moreover, ulceration is more amenable to treatment. The evidence of cancer is most marked when the pylorus is affected and obstructive disease set up. Where such is not the case, it is sometimes, however, found after death, without having led to any marked symptom, the patient having died from another disease. Such was observed in the third case narrated; the symptoms of ascites and cirrhosis obscured those of cancer of the stomach. In Case LVII. the regurgitation of glairy, gelatinous fluid, with gradual emaciation, were the most marked symptoms. It sometimes happens that cancerous disease of the liver is followed by infiltration of glands at the head of the pancreas, which become united to the pylorus; and, without having infiltrated the mucous membrane, have led to obstruction at this part, causing hypertrophy of the muscular coat, and, by this obstruction, simulated primary cancer of the stomach itself.

Where the cardiac extremity is diseased, the vomiting frequently occurs so immediately after taking food that the symptoms resemble cancerous disease, or obstruction of the œsophagus itself.

In some instances the pneumogastric nerves may be traced through the medullary tumours of the stomach; and either the nerve-fibres may be found to present their ordinary microscopical appearance or be entirely destroyed.

The cancerous ulceration extends sometimes to the destruction of adjoining tissues. In Case LXI. the transverse colon was adherent, and communicated with the stomach by a valvular sloughy opening. If the opening had been enlarged, feces would probably have passed; but this is perhaps more common in cancerous disease commencing in the colon; so also the extension to the abdominal parietes. In

the case just referred to there was no evidence that feces passed into the stomach, but merely gas, which much distressed the patient by the fecal odour of the eructation.

The cancer is generally found to have involved the glands in the small omentum at the lesser curvature. Next in frequency we find the liver also involved, sometimes to a very great extent, so that it is difficult to state in which structure the disease commenced; then the glands in the anterior or posterior mediastinum, and tubercles are found in the lungs. And lastly, other abdominal viscera, the peritoneum, kidneys, spleen, contain cancerous growths. In cancerous disease we observe that the coats of the stomach themselves become infiltrated, and in this respect contrast with the condition which we find in fibroid degeneration of the pylorus. In any form of obstructive disease at the pylorus, the muscular walls become hypertrophied; if there has been ulceration at the pylorus and obstruction removed, the hypertrophy may be exceedingly slight; so also where the central portions of the stomach or the cardia are affected.

In the treatment of cancer of the stomach the same remedies which have been mentioned in chronic ulceration may afford great comfort to the patient, although ineffectual to the cure; but it will sometimes be found that life is prolonged, and ease obtained by administering nutrient enemata. The distressing flatulence and fermentation, and vomiting of food is thus avoided, and the sufferer more nourished even by this imperfect means.

CASE LIV. Scirrhus pylorus. Carcinomatous tubercles in the liver, on diaphragm, spleen, and kidney.—Edgar C——, æt. 40, admitted January, 1855. He was a cooper, and till the present attack had good health. Four months ago sickness came on, generally a few hours after taking food, but sometimes three or four meals were retained. A tumour could be felt in the regions of the pylorus, and there was great emaciation.

Inspection twenty-six hours after death.—Thoracic viscera were quite free from disease. There were several white, firm tubercles in the abdomen, about the size of peas, on the under surface of the diaphragm, between it and the liver; similar tubercles were observed on the sheath of the right kidney, and a rather larger one on the surface of the spleen. In the liver, on its under surface, were several tubera, about half an inch in diameter, their edges raised, and circumference well defined, the remaining portion of the viscus healthy. The stomach was very much distended with air, and dark reddish-coloured fluid; at its lesser curvature, a small tubercle was observed on the peritoneal surface; several of the nerves at the lesser curvature were involved in this growth. On opening the stomach, it was found to contain fluid, as before mentioned, smelling very strongly of lactic acid. At the pylorus was found a hard mass, composed principally of glands, on the inferior surface infiltrated with dense cancerous deposit. The opening would admit a large-sized bougie or catheter. Near the pylorus and at it, the mucous membrane was destroyed by ulceration, the edge of the ulcer raised, and in some parts vascular. The muscular coat could be traced somewhat thickened, but in a healthy condition, nearly to the pylorus; it then became involved in the cancerous infiltration, and was of a whitish colour; at the pylorus itself, both muscular and mucous coats were destroyed, and semi-cartilaginous tissue only remained for about three-quarters of an inch. The mucous membrane and the infiltrated tissue presented well-marked cancer-cells, with very large nuclei, and aggregated cells, as in epithelial cancer; the dense tissue beneath was gland tissue, infiltrated with scirrhus product. The pancreas was healthy. The muscular tissue, up to the pylorus, was healthy. In the duodenum was bilious matter, and a considerable number of white grains, at first supposed to be Brunner's glands; they were found

to consist of solitary glands. Remaining portion of intestine healthy; there were some glands, at the commencement of the rectum, infiltrated, but the mucous membrane was sound.

The symptoms in this case were well marked, and it was evident that there was obstructive disease at the pylorus. The examination of the growth at that part showed great resemblance to epithelial cancer; the glands, however, were infiltrated, and cancerous tubera were found in the liver, and on the peritoneum; these were more like those of ordinary scirrhus.

It was an interesting fact to find at the rectum—a frequent seat of cancer, glands infiltrated; although the lumbar glands and mesenteric were, excepting near the stomach, free from disease.

CASE LV. *Medullary cancer of the stomach, having villous character.*—Thomas G—, æt. 62, admitted December 13, 1854. He had been a shepherd at Shoreham, and eight months before admission experienced flatulence, loss of appetite, and dyspepsia. For six weeks had been very ill, with occasional vomiting. He had no pain or uneasiness at the stomach. He was emaciated, and had occasional vomiting; slight œdema of the ankles came on; there was a tumour, about the size of an orange, situated just above the umbilicus, but separable from the liver, and slightly movable on respiration. He died Jan., 1855.

Inspection seventeen hours after death.—There was slight arcus senilis. The thoracic viscera were healthy. On opening the abdomen, a tumour, about the size of an orange, was found to be situated at the pyloric end of the stomach; the gall-bladder above was adherent to it, accounting for the movements of the tumour with the liver; and below, the transverse colon was inseparably united with it, and at that part the omentum. The pylorus appeared embraced by the growth extending from above and below, but on opening the stomach the whole of its calibre was found affected. The intestines were collapsed, the liver healthy, but its peritoneal coat was thickened at its lower margin. The gall-bladder was empty; pancreas not at all affected, though in close contact with the tumour; the kidneys small, atrophied, and containing cysts. There were several gastric glands in the neighbourhood of the lesser omentum, which were infiltrated with cancer, but the lumbar and bronchial glands were not affected. On opening the stomach, it presented a large medullary growth, extending about two inches from the pylorus into the stomach, involving the whole of the valve, and forming a projecting, soft, tubercular ring, vascular, and extending into the duodenum. The pylorus itself would admit the tip of the little finger. This growth was soft, of a yellowish-white colour, and about one inch in thickness. At the margin the muscular coat could be traced into it, forming a semi-transparent layer, about a quarter of an inch in thickness, but evidently infiltrated with cancer; at the edge of the cancer the muscular coat suddenly became of its usual thickness, showing that there had not been great obstruction, so as to lead to much hypertrophy of that layer. Near to the lesser curvature was another growth, projecting from the mucous membrane, soft, irregular on its surface, and covering about a square inch of intestine; it was about half an inch in thickness, and at its edges presented small, soft, tubercular growths, projecting from the membrane. The mucous coat, involved in carcinomatous disease, could be dissected off, away from the muscular, till near the centre of the growth, where the whole was firmly united together, and large vessels could be seen passing into the cancerous growth. Near this part, vessels full of blood passed to its circumference, giving it, in some parts, a red and vascular appearance.

On microscopical examination the mass was found to consist of cells and nuclei, varying in size, some about the size of epithelium. The nuclei were large, very distinct, some with double nucleoli.

On taking a portion of the surface of the tumour, numerous rod-like processes were observed, some extending for a considerable

distance, having quite the character of villi, and giving to the margin of the growth a flocculent appearance when floated in water. These when examined were found to contain numerous nuclei.

On examining the margin of the growth, the gastric follicles were much degenerated, in some parts distended, but without cells; in others, only the termination of the follicles could be seen, some of the follicles were irregularly distended, and presented crystals on the surface of the membrane.

The former portion contained more fibrous tissue, arranged in meshes, with acetic acid becoming minutely granular.

The whole appearance of this structure was that of medullary cancer; it was composed principally of nuclei, and had affected the pyloric extremity, leading to symptoms of obstruction. There was some infiltration of the adjoining glands, but the remaining viscera were healthy. The growth appeared to have commenced in the mucous membrane. It was on the examination of the surface, however, that the resemblance to villous cancer was found; it had a flocculent appearance, and microscopical examination showed that this arose from villous processes extending from the surface.

This case appears to stand in an intermediate position between medullary and villous cancer, and confirms the opinion expressed by Professor Paget, that the latter may be merely a variety of the more common form.

CASE LVI. Villous cancer of the stomach. Cirrhosis. Ascites.—Isabella D —, æt. 65, admitted July 11, 1855, and died July 26. She was a married woman, who had been accustomed to take spirits. She stated that she was in good health till January last, when she caught cold, succeeded by cough and shortness of breath, and burning pain at the scrobiculus cordis. Seven weeks before admission, her legs began to swell, and afterwards the abdomen; diarrhoea, great prostration, and syncope came on, and before death, partial coma.

Inspection nineteen hours after death.—The mitral and aortic valves were opaque. There were adhesions between the liver, colon, and stomach; and the peritoneum contained about a gallon of serum. The liver was in a state of advanced cirrhosis. The stomach was moderate in size, flaccid, and on the inner aspect of its anterior wall, presented a large villous growth about 3 inches in diameter, the edges raised, the centre ulcerated. On floating in water, it presented beautiful villous processes; these, under the microscope, were found to consist of long delicate growths, some terminating in points, and filled with granules. The base of the growth presented nuclei. There was no hypertrophy of the pylorus, or of any portion of the muscular coat. The other portions of the mucous membrane presented gastric follicles, containing fat and nuclei. The kidneys were atrophied.

In this case, with the exception of burning pain at the stomach two months before death, which is a not unfrequent symptom of dyspepsia, there was no sign observed of disease of the stomach. This is partly explained by the disease affecting the anterior surface of the organ, leaving the pylorus perfectly free. This absence of obstruction was further shown by the atrophic rather than hypertrophic condition of the muscular coat. The advanced disease of the liver producing dropsy, appeared sufficient to explain all the symptoms, and the distension of the stomach entirely prevented any tumour being felt at that region.

CASE LVII. *Colloid cancer of stomach and colon*.—Elizabeth T—, æt. 37, admitted July, 1850. She had been a servant, and had been out of health for four months, but twelve months previous to admission had had jaundice. She was somewhat emaciated, and had a sallow, aged, and very haggard expression of countenance; complained much of flatulent distension of the abdomen, with sensation of sinking at the scrobiculus cordis; after eating, she suffered much pain at the stomach, but this pain was most severe after taking fluids. There was occasional vomiting, or rather regurgitation of thin, glairy, gelatinous fluid; this came up into the throat, especially at night. The bowels were constipated, and she was troubled with hemorrhoids. The abdomen was moderately distended, but no tumor could be felt on manipulation. The pulse was feeble. She was in a semi-jaundiced and drowsy condition, complained of a sense of fullness in the head, and of *muscæ volitantes*; she became more and more exhausted, and gradually sank.

Inspection was made August 5th. The body was not extremely emaciated. The intestines were much distended with flatus, and the peritoneal sac contained several pints of fluid. The stomach was very much contracted, its walls three-fourths of an inch in thickness. The outer or muscular layer was a quarter of an inch, semi-transparent, and divided by white bands continuous with the submucous tissue. The mucous membrane itself consisted of minute colloid cysts, containing clear gelatinous fluid; they were most distinctly observed on the internal surface of the stomach. The whole mucous membrane had a pulpy, honey-comb appearance; there was some ulceration observed, and congestion of the vessels. The pylorus was not thicker than the rest of the stomach, but the hypertrophy of the muscular coat extended the whole length of the œsophagus. Some of the glands of the curvature of the stomach were thickened and hard. The fluid from the colloid cysts contained large cells filled with several nuclei, and were surrounded by very delicate areolar tissue; this tissue in some parts consisted of curved compound nucleated cells. The vessels of the stomach were rendered quite patulous by the tissue placed around them. The small intestines were free, but the large intestine much thickened; immediately above the cæcum there was a portion affected with colloid growth, and in the hypertrophy of the muscular coat having the appearance of a pylorus; the submucous coat much thickened. Some of the solitary glands in the large intestine appeared enlarged. The liver, kidneys, and spleen, were healthy; so also the thoracic viscera. The heart contracted.

In this case, the symptoms at first were not at all more severe than those often observed in pyrosis, with flatulent distension of the abdomen; nor was the serious nature of the disease for some time anticipated.

The stomach is preserved in the Museum, No. 1813²⁹, and shows in a very beautiful manner the structure of colloid cancer. The hypertrophy of the muscular coat was remarkably extensive, reaching into the œsophagus. The small intestine was free; but the mucous membrane of the colon was affected with similar disease to that of the stomach. Of this there was no evidence during life, although the constipation of the bowels was perhaps rather more obstinate than in cases of ordinary cancer of the stomach; but not more than is observed in many cases of dyspepsia. The most marked symptom was the regurgitation and the filling of the mouth during sleep with watery gelatinous fluid; this unfortunately was not examined microscopically during life; it might have afforded clear evidence of the nature of the disease. The semi-jaundiced condition appears to have arisen from slight pressure by diseased glands on the common bile-duct. The colloid disease appeared to have originated in the mucous membrane, and to have gradually extended through the whole of the mucous membrane of the stomach by continuity of structure. It would seem probable that it originated

in the glandular structure of the stomach, rather than in the sub-mucous areolar tissue, the ordinary seat of carcinoma medullare.

CASE LVIII. *Colloid cancer of stomach, omentum, peritoneum, and rectum.*—John C—, æt. 47, was a pensioner, and one month before his admission, began to experience pain at the scrobiculus cordis. Vomiting came on, costiveness, and gradual emaciation. A tumour could be felt extending across the abdomen, and it was doubtful whether this was the margin of the liver, or a tumour involving the pylorus, or thickened omentum. He died on September 4, and was examined thirty-one hours after death.

Parietes of the abdomen were very thin. The peritoneal cavity contained several gallons of fluid of very deep colour, almost sanguineous; the serum presented shreds of lymph, and other delicate bands of lymph passed between the coils of the intestine. The omentum was found to be contracted into a thick yellowish mass, about half an inch in breadth, which projected towards the abdominal parietes. The margin was irregularly notched and situated immediately above the transverse colon. The surface of the liver was roughened by small gelatinous tubercles, and a thick layer covered the whole surface of the diaphragm, which at this part was much thickened, and the pleural surface enroached upon. The lesser omentum was also much thickened, and a white hard mass about the size of a hen's egg was situated at the lesser curvature of the stomach, near the pylorus. The small intestines were contracted, the large distended; their peritoneal surface everywhere studded with small tubercles, from the size of a millet-seed to that of a bean; these were soft, gelatinous and of a red colour. The sac of the lesser omentum contained similar tubercles as the general cavity of the peritoneum, and was distended with fluid. The cavity of the stomach was small, its parietes thickened; and at the lesser curvature from the œsophagus to the pylorus, the mucous membrane was irregularly raised, and presented an appearance of cells distended with clear gelatinous fluid. The larger curvature was healthy. Liver small, and of a deep bilious colour; the hepatic cells contained very little fat. The pancreas and the small and large intestines were healthy, but at the commencement of the rectum was a small nodule of cancerous growth; this had led to thickening of the mucous and muscular coat, and the intestine at that part would scarcely admit the index finger. Preparation No. 1813³⁰.

The microscopical examination showed well-marked characters of colloid cancer. The growths on the peritoneum consisted of large compound nucleated cells, and a delicate intervening fibrous tissue. In the omentum, there was a greater quantity of fibrous tissue between the cells; some of the cells contained four or five large nuclei, rendered very distinct by acetic acid. The mucous membrane of the stomach presented similar structural elements. The affection of the rectum in this case was an interesting association of disease.

CASE LIX. *Medullary cancer of stomach and liver, lungs, &c.*—William C—, æt. 60, admitted into Guy's Feb. 12th, and died March 7th. He was a patten-maker at Woolwich, and of temperate habits. Three months before his death he began to experience pain at the scrobiculus cordis, and in the loins, but had no vomiting till a short time before his death, when he brought up coffee-ground substance. On admission he was feeble, emaciated, and anæmiated; his pallor, however, increased; and it was evident that he was rapidly sinking. At the right hypochondriac and epigastric regions a large tumour could be felt.

Inspection was made eleven hours after death. On removing the liver and bringing the stomach into view, a large cluster of malignant glands were seen at the lesser curvature, one being the size of an egg. From the great amount of disease, and the enlargement of the liver, the cancerous tubera in the two parts came into contact. When the stomach was opened, a large tumour was found within it, occupying the lesser curvature. It was sloughing, of a greenish brown colour, and very offensive, and its tissue broken up; it was very vascular, and had no doubt been the source of hemorrhage. It was nearer to the œsophageal opening than the pylorus, and occu-

pied about half the length of the lesser curvature. The stomach was elsewhere healthy, and contained a light brownish fluid. At the seat of the growth the walls of the stomach were beginning to slough.

The liver was much enlarged by carcinomatous growths throughout the substance; the cancer was soft, red, and very vascular.

The intestines and other abdominal organs were healthy.

In the lungs were numerous small cancerous nodules scattered throughout the lungs, each organ containing about twenty to thirty. They were soft, red, and vascular; the largest about half an inch in diameter.

In this case there was no obstruction at the pylorus, and hence an absence of some of the more common signs of cancer, vomiting after food, &c. The pallor and exhaustion, with evidence of an abnormal growth at the stomach or liver, were the more marked signs, and it was shown after death that the exceedingly vascular character of the cancer had led to the oozing of blood and the pallor of the patient.

CASE LX. *Chronic ulceration of stomach. Cancer.*—James T—, æt. 46, a weaver who had been living at Spitalfields, a regular, sober man, but who had been a great smoker. His father and mother both died of phthisis; for thirty-four years he had been employed at the loom, and had suffered much from the shuttle striking the scrobiculus cordis; at first it produced nausea and faintness for several hours together. Five years ago the same unpleasant symptoms returned, obliging him to discontinue his work, but now accompanied with vomiting, at first only in the morning after breakfast; these symptoms continued for four years, and then left him for three months, during which time he rapidly gained flesh, and continued his employment.

Six months ago he was again attacked with pain and vomiting, and began to lose flesh; he suffered great pain if he fasted, but on taking food the pain very soon returned, and was only relieved by vomiting; the vomiting sometimes came on immediately after a meal, or it was delayed for about six hours; he had never vomited blood; the bowels were constipated, and the urine scanty.

He was a small man of light complexion, and had a diabetic appearance. The chest was healthy; the tongue moist and clean; the abdomen soft, flattened, and contracted; the integuments dry.

Magn. fluid $\frac{3}{ss}$ and hydrocy. dil. $\frac{mij}{i}$ were ordered three times a day. Enema saponis.

The vomiting continued very severe, and he became increasingly prostrate; hic-cough came on, coffee-ground vomiting and death.

On inspection, the body was extremely emaciated; the lungs collapsed; much black pigment upon them, but otherwise healthy. *Heart* healthy. *Abdomen*. Intestines collapsed; at the duodenum much contraction from puckering of omentum and stomach. *Stomach*. Walls exceedingly thin and atrophied; about two inches from the pylorus was a contraction, which at first was mistaken for the pylorus; there was considerable contraction of the omentum at that part, and firm semi-cartilaginous hardness of the structure. On opening the stomach, an elongated ulcer, oval, about two and a half inches in length, and one in breadth, was observed, its long axis forming the circumference of the contraction; its edges were rounded and elevated; its base quite smooth. On section, the mucous membrane appeared to be continuous with the upper layer of the ulcer; its deeper layers were very firm, white and fibrous; beyond the ulcer and its contraction, was a portion of healthy mucous membrane, then the pylorus, which was perfectly healthy. The first part of the duodenum was congested, and there was pigment in the mucous membrane; in the omentum were several hard tumours, and the omentum itself formed a firm contracted mass about the size of the middle finger. On section, these structures were firm, and contained whitish juice, and under the microscope showed large cells containing large, very distinct nuclei, evidently cancerous. In the stomach no follicles could be detected on the smooth surface of the ulcer; and in the structure beneath, none of the cancerous cells found in the omentum and glands were present, but abundant fibrous tissue; there was also much fibrous tissue in the omentum, &c. The rest of the intestine

was healthy, the colon contracted, and contained some scybala. Liver healthy; spleen enlarged, firm; kidney's healthy.

The history and appearances after death in this case warranted the belief, that ulceration of the stomach had existed for a considerable time; and although we found evidence of cancerous tubercles in the omentum, I think it probable that the development of cancerous growth only took place during the latter stage of the disease; the growth closely resembled chronic ulcer in its general and microscopical appearance, except that it nearly surrounded the pyloric extremity.

CASE LXI. *Cancer of stomach. Communication with colon. Ulceration of cæcum and ileum. Chronic phthisis.*—John T——, æt. 67, admitted Aug. 15th, 1855, a married man, who had resided at Greenwich: he had been out of health for twelve months, complaining of dyspepsia, and pain at the scrobiculus cordis; the food appeared to remain at the end of the œsophagus, and not to reach the stomach; there had been no vomiting either before or after admission, but a hard defined growth could be felt at the scrobiculus cordis, which left little doubt as to the nature of the complaint; the abdomen was collapsed. Sept. 15th, greatly emaciated, and able to take but very little food; his mind wandered much; the feet and hands were œdematous; and numerous spots of purpura were found on the hands and forearms. He gradually sank, sustained for a time by brandy and egg mixture.

Inspection.—The body much emaciated. *Chest.* Very strong pleuritic adhesions, especially on the right apex; the right lung was puckered, exceedingly dense, and on section presented iron gray consolidation, occupying nearly the whole upper lobe; in the centre firm and calcareous; the lower portion of the upper lobe contained numerous miliary tubercles, some surrounded by dense, others with crepitant lung; at the lower lobe were scattered isolated firm miliary tubercle, semi-transparent in colour. On the surface of the lobe were several lobules which were broken down in the centre into thin pus, and surrounded by a tolerably defined margin; the extreme edge of the lung was emphysematous; the left lung was in a similar condition; the bronchial glands were healthy; the tubercle in the lungs consisted of molecular matter, small irregular cells and nuclei; some of the cells the size of the ordinary ones in the pulmonary structure, but none like those in the stomach.

The abdomen was collapsed; the stomach was firmly adherent to the transverse colon. On opening the latter, along the lesser curvature, a large growth, nearly four inches in circumference, was found at the pyloric extremity, involving the whole of the pylorus, and surrounding the stomach at that part; the edge was thick, rounded, and raised an inch above the surrounding mucous membrane, so that the growth formed a sort of cup; the margin was of a deep purplish hue; the centre presented an irregular ragged slough of a brown colour, and deeply excavated, and of a feculent odour. At the pylorus, the coat was about four lines in thickness, of a whitish color, with small, intersecting, semi-transparent bands. Nearer to the cardiac extremity, were two small raised growths, one about half an inch in diameter, red and prominent, the other about a quarter of an inch in diameter. The rest of the mucous membrane was pale. The stomach, near the pylorus, was firmly adherent to the transverse colon, and from the centre of the slough a probe could be passed into the colon; the opening in the colon was valvular, gray, and about a line in diameter. The pancreas and omentum were healthy; several mesenteric glands in the neighbourhood were infiltrated with soft cancerous product. The duodenum was gray, its mucous membrane healthy; at the ilio-cæcal valve were the remains of an ulcer, occupying nearly the whole of the last Peyer's gland, and extending into the cæcum; its margin was raised, and presented several congested nodules. Externally, the cellular coat was firm, hard, and contracted; the remaining part of the intestines were healthy.

On examining the stomach with the microscope, the growth presented on the surface columnar epithelium, and consisted of nucleated cells, with very large nuclei, and very distinct single or double nuclei, and of delicate intervening fibrous tissue. There was no doubt of their cancerous character. The adjoining mucous membrane pre-

sented numerous fat particles in the follicles; the gland consisted of similar cancerous nuclei.

The ulcer in the ileum and cæcum appeared partially cicatrized, but did not present any cancerous product, only fibrous tissue.

At the pylorus, bands of involuntary muscular fibre were found to extend between cancer, nuclei, and cells.

As far as could be decided by the microscope, the disease in the lung was of a non-cancerous character; it appeared to consist in chronic and almost quiescent state of phthisis; but beside that, there was evidence of acute lobular pneumonia coming on, probably, a short time before death. The condition of the ileum was that of a healing ulcer. It was difficult to obtain a full history from the patient, and the evident cancer of the stomach obscured those of pulmonary disease.

CASE LXII. *Cancer of stomach*.—Martin F——, æt. 65, admitted into Guy's, Aug. 8th, 1856, and died November 23d. He was admitted with the ordinary symptoms of cancerous disease of the stomach, and gradually sank.

Inspection was made thirty-two hours after death. On opening the abdomen, the intestines and stomach were found to be collapsed; at the lesser curvature of the stomach, were several hard glands, some adherent to the stomach, others to the pylorus: some of these were softening in the centre. On opening the stomach, the pylorus was found to be very much contracted, its walls of a yellowish white colour, and soft consistency, replacing the ordinary muscular and mucous coats. It was evidently cancerous. The muscular coat was not hypertrophied, as we generally find in obstruction at the pylorus, showing that the passage had remained tolerably free. Near the lesser curvature, one of the tumours was beginning to protrude.

At the upper part of the œsophagus, the mucous membrane appeared as if it were affected with cancer; numerous oval, slightly raised spaces were of a whitish colour, and firm in consistency; they did not contain the elements of cancer; the apices of the lungs were adherent, and presented some gray induration at that part; other tissues healthy, except two small cancerous masses in the liver.

I have introduced this case to show, by the inspection after death, that the hypertrophy of the muscular coat is sometimes very slight, although the disease had existed at the pylorus.

The preceding cases indicate, 1. That the symptoms of cancerous disease of the stomach may be exceedingly slight, and the disease easily overlooked; 2. That the indications are more marked where the orifices are affected; 3. That in most cases, death takes place from exhaustion or asthenia; 4. Fatal hemorrhage and perforation are more rare than in ulceration of the stomach; 5. That the absorption of degenerating cancer structure sometimes leads to symptoms resembling pyæmia; 6. That some of the distressing symptoms may be alleviated, but that over-active treatment appears to hasten the fatal termination.

CHAPTER IV.

FUNCTIONAL DISEASES OF THE STOMACH.

THE imperfect action of the organs of digestion arises from very varied causes, and its several forms are generally associated together under the term *dyspepsia*.

It is very frequently found at the commencement of serious organic changes in the stomach, which steadily advance to a fatal termination. In by far the larger number of instances its symptoms pass off, or are mitigated after a longer or shorter period; and where the immediate cause of death has arisen from other diseases, we are often unable to find any structural change in the stomach, either in its secretions or component parts, although dyspepsia may have existed for some time; these cases constitute what are ordinarily regarded as functional diseases of the organ, the conditions being either transient or of such a character as to be beyond our sphere of observation.

Dyspepsia arises, 1. From abnormal condition of the mucous membrane and its secretion; 2. From the muscular movements being impeded; 3. From the state of the vascular supply; 4. From the condition of the nervous system; and lastly, From the character and changes which take place in the food. Several of these causes of dyspepsia may be combined; some lead to disease of a very transient form, others are irremediable.

1. Dyspepsia from abnormal condition of the mucous membrane and its secretion.

The experiments and observations of Dr. Beaumont on Alexis St. Martin have pointed out the state of the mucous membrane which sometimes exists after improper food or stimulants; the surface of the stomach he found in such cases much injected, or erythematous. The secretion diminished, and during this period more or less discomfort was generally produced; this condition entirely ceased in a short time, and the surface presented its usual appearance; but if death had taken place from some other cause during that condition of dyspepsia, this abnormal state would have disappeared, and no structural lesion have been discovered on careful or even microscopical inspection. The deficiency of gastric juice may be a relative rather than an actual one. A greater amount of food being taken than is needed for the system, or than can be dissolved, it remains in its

undigested state and acts as an irritant, becoming a very fertile source of dyspepsia; the crude substance not only disturbs the stomach and its secretions, but if it be allowed to pass the pylorus acts upon the whole canal; or fermentative changes are set up, which we shall afterwards have to notice.

Where excess of this kind is habitual, more permanent results follow, which resemble those found in some cases from diminished secretion.

In describing the various forms of dyspepsia which have their origin in an abnormal condition of the gastric juice, we may divide them as follows: 1st. It may be deficient in quantity; 2d. Irregularly secreted; 3d. In excess; 4th. Changed in character, as in pyrosis, in gout, or lithic acid diathesis, or in albuminuria.

The deficient secretion produces varied symptoms, and may arise from many causes. After intemperance, either in eating or drinking, the gastric mucous membrane becomes over-stimulated, the portal system engorged, and the liver congested and disordered; in this state secretion does not take place in the stomach, and dyspepsia is produced.

The complexion becomes slightly sallow, the tongue furred, the appetite impaired, occasionally slight nausea or vomiting, thirst, mental depression or headache, in some cases pain at the scrobiculus cordis, and between the shoulders or in the bowels supervenes, and there may be diarrhœa.

Where excess is habitual the same symptoms are produced, but modified; the patient is hypochondriacal; he often believes himself to be the subject of serious disease of the liver, the bowels are constipated or irregular; flatulence, spasmodic pain or cramp in the abdomen, pain across the chest, or tenderness at the scrobiculus cordis are produced; the tongue is furred, or its papillæ are distinct and injected, the pulse compressible; there is often a sense of exhaustion and imaginary physical fatigue or loss of muscular power. Sometimes there is severe headache, vomiting, disturbed vision, loss of sleep, or dreams. In this condition food taken into the stomach remains undigested, and there is a sense of weight or "load at the chest."

Where these symptoms result from totally different causes they are greatly modified. The deficient secretion does not arise from vascular plethora, but the reverse; sedentary occupations, want of exercise, mental distress, over excitement, anxiety, or insufficient food. Here we find loss of appetite or a fastidious one, pain in the head, the tongue slightly ejected in its papillæ, and whitish fur upon it, though in many cases the tongue is clean, large, and indented; there is sometimes nausea, or actual vomiting, the bowels are constipated or irregular; a sense of oppression or weight comes on after eating, sometimes followed by a throbbing sensation in the abdomen and almost over the whole body, with languor or drowsiness; at other times there is faintness, and where undigested food passes into

the pylorus and duodenum, violent cramp or spasmodic pain is produced.

Ingesta may be retained in the stomach many hours, and in some cases even days in a crude state; the secretion is not sufficient to dissolve what is placed in the viscus; the irritation produced by the retained food aggravates the ailment, and fermentation or decomposition is set up, with flatulence, pain, heartburn, or severe gastralgia. This, however, may arise from excess of food rather than diminished solvent power, as we have previously noticed.

In the treatment of this form of dyspepsia, arising from repletion, an emetic is advisable; if more chronic effects have been produced, small alterative doses of blue pill, with rhubarb and magnesian purgatives; by these means the portal system becomes freed from engorgement, and proper secretion takes place; should sense of exhaustion then continue, it is well to give hydrochloric or nitrohydrochloric acids with infusion of gentian or calumba.

The character and quantity of the food is a most important consideration; meals taken too frequently, or in excess, may be the cause of the malady. Before the stomach can empty itself it is again irritated by a fresh supply; a variety of dishes prompts to intemperance, and is especially injurious when associated with late hours and deficient exercise.

Again, the imperfect mastication of food increases the difficulty, so that the secretions of the stomach are unaided in its solution. This may arise from the hurry of business, the force of habit, or because the agents of mastication are destroyed. The dentist by restoring teeth may afford the most effectual means of removing this form of dyspepsia. The diet should be plain and easy of digestion, not rich or highly seasoned, and the patient is better without stimulants, or malt liquors.

Soda water, or effervescent salines with hydrocyanic acid, may be given if the stomach be irritable. The carbonic acid acts as an anodyne to the mucous membrane, and the saline when present helps to relieve portal congestion.

But in the class of cases where such great congestion does not exist, we must relieve constipation by aloes and myrrh, or colocynth with henbane; an alterative dose of blue pill, or oxide of mercury, will sometimes be of advantage; and to improve the condition of the stomach itself, give capsicum with a small dose of ipecacuanha, sulphuric or hydrochloric acid, carbonate of ammonia, or sal-volatile with bitter infusions. The food must be well masticated, and sufficient time allowed for this important preliminary act, followed by proper exercise.

Where there has been over fatigue, anxiety, excessive grief, deficient food, or exhaustion from any cause, we find that stimulants are of great value; a small quantity of brandy, or a glass of wine, acts as a healthy stimulus to the mucous membrane, and to the nervous system. In many cases where food could not be taken

without the production of severe pain, or vomiting, the stimulant acts with the best effect.

Where there is anæmia, as after parturition, miscarriage, or loss of blood, this form of dyspepsia is not unfrequent, and is relieved by small doses of steel, often combined with quinine with advantage where there is no irritability of the stomach. The milder preparations of steel are, however, to be preferred, as the ammonio-citrate, tartrate or phosphate, the compound steel pill; or the liquor cinchonæ, a more elegant preparation than decoction of cinchona, and often more easily borne than quinine itself; the bitter infusions, gentian, orange, cascarilla, may also be prescribed with advantage with hydrochloric or nitric acids.

In imperfect secretion of gastric juice, Dr. Ballard¹ has introduced into English practice the suggestion of M. Corvisart, to employ an artificial digestive fluid, in the form of pepsine, prepared from the stomach of ruminants. This is mixed with starch, and constitutes "Poudre Nutrimentive," and is prescribed in doses of fifteen grains; to some of this lactic acid hydrochlorate of morphia or strychnine is added. In several cases in which I have tried the fluid pepsine (prepared by Mr. Squire), I have not yet met with the success expected from the high encomiums of Dr. Ballard; a fuller trial may lead to more favourable results. Rightly to estimate the value of pepsine as a remedy, the morphia and strychnia must be omitted, otherwise beneficial results may be improperly interpreted. Both these remedies are themselves valuable in atonic dyspepsia. In all cases, it is desirable to remove the causes of the imperfect secretion, if possible, rather than to supply a very imperfect artificial substitute.

The stimulant effects of coffee, ammonia, &c., are not so effective as those of alcohol in these cases, and brandy or wine is often better than malt liquor. In saying this we are very far from recommending the habitual use of such stimulants.

The habit of smoking, or snuff-taking, produces a relaxed and enfeebled condition of the mucous membrane; its secretions are not sufficient to insure solution of the food; stimulants are often resorted to to counteract the effect, and many suffer severe dyspepsia from this cause.

Where the stomach appears in an irritated, or perhaps erythematous condition, we have greater nausea, or vomiting, pain at the stomach, and disrelish for food; the administration of alkalies, of potash, or soda, are more beneficial than acids; the latter act as astringents and tonics to the relaxed mucous membrane; the former act as sedatives, rendering the abnormal as well as scanty secretion less irritating, and enabling the diseased membrane more quickly to recover itself, and to pour forth its proper secretion; these cases ought, perhaps, to be considered as slight inflammatory conditions of the stomach.

¹ Ballard on Artificial Digestion.

In *advanced life*, we sometimes find the powers of digestion greatly enfeebled; there is pain at the scrobiculus cordis, no appetite or relish for food, the pulse languid or compressible, the tongue partially furred, the bowels inactive. It appears probable that from the feebleness of the circulation, from degenerated condition of the vessels, the mucous membrane does not receive its proper supply of blood; it is true that in age repair takes place in less degree than destruction of tissue, and that emaciation is the result; but this may become so great, and the circulation be so enfeebled, that the patient suffers from anaesthesia; the brain is unable to carry on its function, syncope, vertigo, and even ramollissement of the brain may result.

In this state, it is well to give food in its most nutritious forms, and more frequently than usual. Well-seasoned dishes, mustard, capsicum, salts, &c., stimulants in small quantities, are beneficial; coffee, ammonia, and tonics, are also called for.

In *very stout* persons, or those in whom the appetite has previously been pampered, we find feebleness of digestion, sense of weight or exhaustion, and spasmodic pain, or irregular action of the heart, are easily induced. This arises in part from the feeble condition of the heart and circulation, and often from an inactive state of the liver. Much relief is afforded by occasional alteratives, by aloes, rhubarb, and taraxacum, or by nitro-hydrochloric acid with bitter infusions. No stimulants should be taken, if possible, and out-door exercise gradually increased.

The secretion of the gastric juice is sometimes *excessive or irregular*. Such irregularity Dr. Budd has mentioned as one cause of varied degrees of gastric solution after death, where other conditions are the same; that whilst in health the stimulus of food leads to its effusion, in disease it may be poured out without this stimulus.

Nausea or vomiting, a craving appetite with pain at the stomach, cramp, or a burning sensation one or two hours after a meal, are the apparent symptoms. These may be indicative of other diseases, and best relieved by remedies calculated to remove them. In other instances a biscuit or crust of bread diminishes the pain. Carbonate of soda, or magnesia, with bitter infusions, may be given. Many of these cases, however, arise from a changed character, rather than quantity of gastric secretion, as in lithic acid diathesis.

Pyrosis or water-brash is a disease of frequent occurrence; it is graphically described by Cullen and other authors, and consists in the effusion of a considerable quantity of thin watery mucus into the stomach: the fluid is vomited or regurgitated. It is much more common among the poorer classes of society, and among women than men. This thin watery fluid is formed in considerable quantity—half a pint being sometimes vomited at one time. It generally occurs when the stomach is empty, and is accompanied with sense of contraction and pain at the epigastric region and at the spine.

The water-brash occasionally alternates with gastralgia, the tongue

may be clean, the pulse normal, the patient tolerably nourished, or anæmiated and enfeebled. The period at which the discharge of fluid takes place varies as to the time or frequency of its recurrence.

It is the opinion of Dr. Handfield Jones,¹ that pyrosis is a chronic catarrh of the mucous membrane of the stomach, similar to the blennorrhœa from the bronchi; and there is much to warrant this supposition. Dr. Chambers² favours the idea that the œsophagus is its source. The disease comes on after the continued use of oat-meal—hence more common in the north; it follows symptoms of chronic gastritis; great anxiety of mind, exhausting disease, over fatigue, or an overworked frame may produce it. We find it also in pregnancy; many such cases present themselves among the out-patients at hospitals and dispensaries. The fluid has sometimes been found to be slightly alkaline, but is generally neutral. The remedies which relieve this condition are astringents and tonics, as sulphate of iron with the extract of logwood; quinine with aloes and myrrh; trisnitrate of bismuth alone or with conium or nux vomica: an alterative of blue pill, with rhubarb is sometimes called for. Liquor potassæ, with hydrocyanic acid or henbane and bitter infusions, are of great service where there is much pain. Other astringents may be used with sedatives or anodynes, as the compound kino powder or catechu; morphia or opium with oxide of silver, sulphate of copper or strychnia, or the infusion, tincture or extract of nux vomica.

CASE LXIII. *Pyrosis*.—A Scotch woman under my care at Guy's, who had had pyrosis for several months, was married and in comfortable circumstances. The attacks of pain, followed by vomiting of watery fluid, were repeated several times during the day. Bismuth, with other remedies, failed to afford relief, but the oxide of silver, gr. $\frac{1}{4}$, with extract of logwood, gr. ij, three times a day, produced very marked improvement. I have seen equal benefit result from sulphate of iron. Strychnia and nux vomica have been less serviceable in my experience of these cases than in those of atonic dyspepsia previously referred to.

A condition which might be mistaken for pyrosis is found to arise in connection with colloid cancer; watery fluid being regurgitated into the mouth. It is important to bear this in mind in the diagnosis of that disease.

With ordinary pyrosis the symptoms are sometimes so severe and persistent as to cause hesitancy in our prognosis, and the fear of carcinomatous disease.

CASE LXIV. *Dyspepsia, pyrosis*.—A gentleman, æt. 53, applied to me some months ago; his mind had been much overworked, and for more than two years he had suffered exceedingly, as much or more from mental depression than actual disease. Whilst his energies were being overtaken he experienced sudden vomiting, and nearly every day water was regurgitated into the mouth; after two months he applied to a surgeon, but his symptoms increased in severity, and were associated with languor and exhaustion. He went on the Continent, yet the ailment continued;

¹ Handfield Jones on the Mucous Membrane of the Stomach.

² Chambers on Digestion.

the sudden severe pain at the stomach was only relieved by lying on the back; he could obtain but little sleep, and suffered occasional vertigo. He returned home, and afterwards went to Somersetshire, Brighton, &c., but without relief.

The fluid ejected was tasteless, clear, and like water; it was generally brought up three hours after eating, and at night sometimes twice; his nights were wretched. Various forms of medicine and diet had been tried, prussic acid, bismuth, silver, nitric and other acids, gentian, soda, calumba, &c., but without apparent benefit. His countenance was natural, but his mind dejected; the conjunctiva watery, the tongue clean, the circulation feeble, the pulse compressible, the urine acid, sp. gr. 1020, not albuminous, neither did it contain crystals nor deposit; nothing could be detected on palpation of the abdomen, but slight pain was produced at the *scrobiculus cordis*.

Steel and quinine were prescribed with capsicum and conium, and a sedative draught at night, regularity of diet, and his mind was encouraged. These means, with a subsequent change of air, produced considerable improvement.

I looked upon this case as functional rather than organic disease of the stomach, and the subsequent history has so far confirmed the diagnosis.

Beside the abnormal conditions of the gastric juice already mentioned, there are two others which must be considered as producing dyspepsia. In lithic acid diathesis, or in gout, we find functional ailment of the stomach, fastidious appetite, heartburn, flushes of heat, pain at the *scrobiculus cordis*, or in the left hypochondriac region; the bowels constipated or irregular, the tongue furred, the mind depressed or over-excitabile, pain in the head, and sometimes severe vomiting or intense pain in the stomach.

The disease appears to be produced by imperfect secondary assimilation, as explained by Dr. Prout. The functions of other viscera are disordered, as of the liver and kidneys; the motions become pale, the urine high-colored, and often deposits lithates, or contains excess of uric acid. The heart and sympathetic nerve are affected; there is often irregularity of the pulse, and there may also be vertigo or transient anæsthesia. The blood contains lithic acid, as shown by Dr. Garrod, or other elements, from the decomposition of tissue, and in this state, the gastric juice is secreted in an abnormal state; it becomes preternaturally acid, from lactic or hydrochloric acids, or is excessive in quantity, and may be otherwise changed.

This form of dyspepsia is easily produced where hereditary tendency exists; but, even where this is not the case, it may arise from over-stimulating diet, excess, or other irregularities.

It is exceedingly important, in this state, to regulate the diet, both as to quality and quantity; it should be well cooked, plain animal food, with vegetables, the latter rather in excess. Stimulants should be avoided, or the lighter wines taken; but though the patient finds that the immediate distress is relieved by ardent spirits, the disease is increased thereby.

In the medicinal treatment, we should seek to remove the causes which have induced the disease; alteratives of blue pill with colchicum, salts of potash, soda, or magnesia, afford temporary relief to the heartburn and pain; so also carminatives and anti-spasmodics, as ginger, capsicum, &c. Taraxacum with salines of potash or soda,

as the bicarbonates, conjoined with bitter infusions or aloes, afford relief, especially when there is evidence of an inactive condition of the liver, as shown by sallow complexion, pale, fecal evacuations, and high coloured urine.

Nothing will avail effectually, however, unless strict dietetic rules be observed, accompanied by exercise in the open air. If the meals be daily hurried, the mind constantly on the stretch from business occupations, the hours of rest shortened, and exhaustion removed by stimulants, the physician has no chance of affording relief. His advice, however, is frequently followed in another form: a visit to some lovely spot is tried (with globules or hydropathy), cessation from business and anxiety, stimulants, and late irregular hours are discontinued, food is taken in moderation, simple and unstimulating, the patient quickly recovers, and the globules or wet sheets are lauded at almost every breath.

In *albuminuria*, the vomiting and nausea, which are amongst its most common symptoms, are generally considered as sympathetic, and that the renal plexus of nerves, in their connection with the semilunar ganglion, with the pneumogastric nerves, and gastric plexuses, lead to vomiting and nausea. This is probably in great measure the case; but another cause has been mentioned, and, I think, very correctly so: the altered condition of the blood, and the excess of urea which it contains, lead to that substance being poured out with the normal gastric juice, which acts as an irritant to the stomach. Urea has been demonstrated in the secretion from the bronchi, and, in fact, exists in all the secretions. It is in vain to expect much relief from remedies directly applied to the stomach; we must direct attention to the kidney, and employ means to restore the blood to its normal state, or to free it from poisonous excreta.

Diaphoretics, and purgatives, warm baths, antimony with acetate of ammonia, and salines, will afford more relief than hydrocyanic acid or creasote. Cupping from the loins will sometimes remove or mitigate this symptom at once.

There are other forms of mal-assimilation which occasion dyspepsia, and we find indications of this in some of the varieties of cutaneous disease. No organ sympathizes more closely with the stomach than the skin. We find this in every period of life; in infants, we have strophulus, or eczema from gastric irritation; in adults some of the forms of urticaria and roseola, eczema, or lepra; in advanced life, eczema and prurigo, &c.

It not unfrequently happens that flatulence is produced by the formation of gas in the stomach, or by its secretion. In cases of hysteria, or in prolonged abstinence from food, &c., the stomach becomes painfully distended, eructations take place, and the power of digestion is diminished. It has been supposed that gas is effused from the capillaries, but of this we have no proof; or whether it arises from a considerable quantity of mucus being poured out which

is decomposed by gastric juice, and thus gas produced, is merely hypothetical; the flatulence is generally preceded by slight pain, or gnawing sensation at the scrobiculus cordis; a full meal in this condition will probably not be digested, but the flatulence be prolonged, and colic produced. The better method is to take a small quantity of nourishment, with some stimulant, a cup of coffee, or a glass of wine, and afterwards a more substantial repast, giving time for thorough mastication.

The *fermentation* of the contents of the stomach, and the symptoms consequent upon it, are due partly to an abnormal state of the secretions, in part to the muscular movements being impeded, or the pylorus obstructed, and sometimes to the character of the food itself. Dr. Budd has distinguished several varieties of fermentation; so also Dr. Turnbull. 1. The formation of sulphuretted hydrogen by simple putrefactive decomposition. 2. The formation of carbonic acid in ordinary fermentation. 3. Lactic acid fermentation, or butyric acid. 4. The formation of *sarcina ventriculi*.

Where the pylorus is obstructed by cancerous disease, spasmodic contraction, hypertrophy, or tumours, the contents of the stomach are retained; the stomach becomes distended, and in this condition vomiting generally follows a few hours after food has been taken; the ejected matters are found partially dissolved, and undergoing fermentation; of a sour smell, and with a yeastlike surface; the pain and flatulent distension are only relieved by vomiting. It is frequently allied to simple fermentation; alcohol is formed, and carbonic acid evolved, some acetic acid is then produced, and the *sarcina ventriculi* is formed, discovered by Mr. Goodsir.

Fermentation of this kind, and the detection of *sarcina*, were at first believed to be pathognomonic of diseased pylorus; this has, however, been found not to be the case; they have been noticed without any obstruction; and I have observed closely allied forms in the fluid presented on a healthy mucous membrane, after death. Fermentation is produced by imperfectly masticated food, and exercise immediately following it; from fermenting or malt liquors, vegetables, or fruit, new bread, salads, &c. Distension is felt almost at once, regurgitation of food into the œsophagus, eructation, palpitation of the heart, &c., takes place; colic is often produced, and sometimes diarrhoea, caused by fermentation, or the presence of semi-digested substance in the intestine.

In the more severe cases from obstruction the sulphite of soda, as recommended by Dr. Jenner, is a valuable remedy; the sulphurous acid is set free and checks the fermentative action. Charcoal has the same effect, so also creasote. The spasmodic pain from distension is relieved by sulphuric or chloric ether, by chloroform or by opium. In the more easy remediable cases arising from fruits, vegetable, or undigested food, mild mercurials, as gray powder or blue pill, and compound rhubarb pill with henbane, may be advan-

tageously followed by ipecacuanha and capsicum, or the nitro-hydrochloric acid with calumba, cascarilla or gentian. These increase the secretion of the gastric juice and improve the tone of the mucous surface; but after the immediate relief of the urgent symptoms the most likely plan to afford permanent benefit is by changing the diet, and taking such substances as the stomach can easily digest.

Another form of fermentation described is that which takes place from starchy elements, milk, &c., and leads to the formation of lactic or butyric acid; severe heartburn is produced, pain at the stomach and between the shoulders, sometimes vomiting but no distension; the pain is occasionally very severe, and in many cases not relieved by vomiting; there is often a sour nauseous taste in the mouth, and there may be spasmodic attacks, or even alarming collapse. The state is much relieved by creasote, opium, bismuth, or by magnesia and hydrocyanic acid.

In infants the most severe collapse ensues from the coagulation of milk in the stomach, and the patient is utterly prostrate, as if suffering from perforation of the intestine or cholera; if recovery takes place, small masses of casein and fatty matter are passed from the intestine.

CASE LXV. *Infantile dyspepsia, sudden collapse.*—An infant about a year old was seized with sudden collapse shortly after being fed, deathly prostration followed, and it was believed by the parents that the child had been poisoned; the flour, milk, water, &c., of which the food had consisted were carefully analyzed by my friend Dr. Odling, and pronounced normal. The infant became cold, apparently in severe pain, its eyes sunken, and after a few hours, several masses of cheesy substance, about half an inch in length, were passed; these I carefully analyzed, and found to consist of oily matter and casein, no doubt arising from milk coagulated in the stomach and passing into the duodenum in this solid form.

Such was my diagnosis of the case, and the rapid recovery of the little patient showed the correctness of the opinion.

In some persons affected with dyspepsia the breath becomes exceedingly offensive, almost of the odour of sulphuretted hydrogen, being similar to that caused by carious teeth, diseased tonsils, or ulcerated nares. This state is due to the putrefactive decomposition of food retained and undigested in the stomach; it is associated generally with vitiated secretions; there is headache, mental depression, the tongue furred, often a sense of uneasiness at the stomach, or pain in the bowels; the evacuations are sometimes dark and unusually offensive, or there is slight diarrhoea. It would appear that, to some extent, effects similar to those observed when sulphuretted hydrogen is respired are the result; and that the blood itself is contaminated by the absorption of gas from the alimentary canal. Putrefactive decomposition may also arise in obstructive disease at the pylorus.

In cases where no obstruction exists, it is well to prescribe a warm saline aperient, as sulphate of soda, with carbonate of soda and aromatic spirit of ammonia; or rhubarb, soda, and calumba,

either in powder, or by means of vegetable infusions. Creasote tends to check decomposition, but its employment is less favourable in these than in previously mentioned instances.

The *impeded movement of the stomach* is not sufficiently considered as a cause of dyspepsia. We observe it in hernia where the omentum is fixed and the stomach dragged from its position. The habit of tight lacing, which few young ladies are willing to admit of, is a fertile source of dyspepsia; in most cases the mischief is done very early in life, the ribs are scarcely allowed to expand, and the stomach is gradually tilted into a vertical position at 14 to 20 years of age, when development is taking place. There is neuralgic pain in the side, flatulent distension of the stomach, food undigested, spasm, borborygmi, hysteria, &c. Digestion requires that the nutriment should slowly revolve round the stomach, and as it is converted into chyme it passes into the duodenum. When the stomach is placed vertically, its semi-digested contents are more likely to be impelled at once into the pylorus.

The dyspepsia which is so common in those who spend many hours over the desk, writing, reading, or in any constrained position, is of this kind. In clerks, shoemakers, dressmakers, we find this continued unnatural posture productive of aggravated indigestion, increased, it is true, in many cases by irregular and intemperate habits.

Severe and constant pain at the scrobiculus cordis and between the shoulders is complained of; the bowels are often constipated, the tongue furred, the mind depressed. We may often do much to remove the disease by enforcing an erect posture during the hours of occupation, by strict attention to diet, by well regulating the bowels, relieving torpor of the liver, and, if needful, by administering mild alteratives, or nitric acid with taraxacum.

In tumours developed at the lesser omentum, or the pancreas, &c., the pylorus becomes pressed upon, and a free passage is prevented; in this case, also, we find pain, and sometimes heart-burn, although there is not sufficient obstruction to produce vomiting.

In other instances, the movements of the stomach are prevented by the presence of fluid in the peritoneal cavity; in ascites and in ovarian dropsy the stomach is so much pressed upon that expansion cannot take place.

It is probable that in some cases of over-distension from flatus, the muscular coat of the stomach is unable to contract, or becomes paralyzed. Dr. W. Philip gives such as his opinion, and cases are not very rare in which, after death, we find the stomach occupying nearly the whole of the abdomen, reaching to the pubes, and apparently causing death. Lesser conditions, doubtless, arise, and are attended with much discomfort, as a sense of distension, flatus, and sometimes intense pain. They are relieved by ether, by antispasmodics, by the gum resins, as galbanum, assafœtida, &c.

It must be borne in mind, however, that this tympanitic state

sometimes arises from inflammation coming on insidiously, and involving the muscular, as well as the peritoneal coats, as in some cases of strumous diathesis. I have seen several instances where such was the case, and when fatal results followed without any pain from the commencement to the close. A short time ago, a policeman complained of fulness of the abdomen, which gradually became tympanitic, but no pain was produced; this state increased for six weeks, with prostration; about a fortnight before death, the tympanitis was less, and fluctuation indistinct. He gradually sank, about ten weeks from the commencement of the illness, but he suffered no pain throughout. There was chronic peritonitis, the whole serous membrane studded over with whitish grains of lymph. There were bands of adhesion, and the peritoneum contained several pints of bloody serum. The serous investment of the spleen was a quarter of an inch in thickness, and contained small opaque cheesy masses. The small intestines were matted together, but not very firmly, and the ileum presented several passive ulcers. In the lungs, at the left apex, was puckering and iron-gray consolidation. We might readily mistake such cases, for they occur in youth as well as in middle life, from ordinary dyspepsia with flatulence.

An appreciation of the condition of the *nervous system* is important in studying disease of the stomach; other organs induce disturbance of this viscus by their nervous and sympathetic relations with it. These may in all cases be referred to the cerebro-spinal or the sympathetic nerve. We find vomiting induced by diseases of the brain; from the pneumogastric nerve, as in hydrocephalus, or some cases of abscesses of the brain—from the uterus, as in pregnancy, uterine disease—in gall-stone, renal disease, and renal calculus—in great loss of blood, &c. Each of these conditions is manifested by peculiar and characteristic symptoms, but violent and most distressing vomiting may result from each, and unless care be taken in the investigation, may obscure the primary malady.

The stomach, however, produces sympathetic disturbance of all these viscera—of the head, causing pain, disturbed vision, *muscæ volitantes*, throbbing in the head and ears, *tinnitus aurium*—it leads to disturbance of the hepatic and renal secretions, and, as it has been justly observed by Dr. Philip, these secondary conditions may become so severe as to be more persistent and trying than the disease of the stomach itself; thus intense neuralgic pain in the face or head, may have the stomach primarily for its source.

An equally marked connection of disease, arising from the state of the nervous system, is in the sympathy of the lungs; thus dyspepsia gives rise to dyspnoea, to cough, &c., from the irritation of the gastric branches of the pneumogastric, producing reflex irritation—so also with the heart, by means of the cardiac branches of the same nerve: we have palpitation or irregular pulsation, simulating severe organic disease.

In phthisis, it has been long noticed that indigestion may precede

the physical signs of disease in the lungs : nausea, loss of appetite, impaired digestion, furred tongue, pain at the scrobiculus cordis being followed by cough, and, after a time, by hæmoptysis and the general signs of tubercular disease.

The observations of Dr. Theophilus Thompson, in reference to the state of the gums in phthisis, a red injected line being produced along the margin of the teeth, is in confirmation of the irritated condition of the mucous membrane. This early state of phthisis is that in which the greatest benefit is derived from the prophylactic treatment ; by change to salubrious or sea air, by attention to warmth and clothing, the avoidance of night exposure, by taking cod-liver oil, and sometimes vegetable tonics, a fatal disease may in many cases be warded off.

The pain which is associated with several of the forms of dyspepsia already mentioned is at times very severe, and appears frequently to be of a neuralgic character, rather than a sign of inflammation or acute disease ; a state of excessive irritability of the stomach is induced, and the contact of any substance is followed by instant rejection. Uterine disease, as leucorrhœa or dysmenorrhœa, is frequently the cause of this excitable condition of the sympathetic nerve. These symptoms may exist without producing any emaciation in the patient.

We may here mention, that intense pain often results from ulceration of the stomach, and we have found large branches of the pneumogastric nerve involved in the thickened edges of the ulcer, where this symptom, accompanied by vomiting, had existed for many weeks before death. In most cases, however, of gastralgia, we have no proof of ulceration existing.

In the treatment of these forms of gastralgia much relief is afforded by hydrocyanic acid, creasote, calcined magnesia with opium, chloroform or chloric ether, or trisnitrate of bismuth with conium ; but opium does not always act favourably—in some instances it appears to increase the disease.

These remedies may be used in several of the forms of sympathetic irritation of the stomach, although more applicable to cases of true gastralgia. When the symptoms result from pregnancy, the mineral acids will sometimes afford relief, when the remedies just mentioned do not avail. In this condition of excessive irritability it is often advisable to omit all medicine, and allow the stomach to rest ; a case of this kind, admitted into Guy's, was cured by administering, for about a fortnight, nutrient enemata, and only a teaspoonful of water occasionally to relieve thirst. Nourishment was afterwards given gradually in the usual form, but without producing any vomiting. Another plan may be followed, recommended by Dr. Hunter, of giving a small quantity of milk and water every ten minutes or half hour.

Many of these cases are associated with hysteria, or with dysmenorrhœa or leucorrhœa. A much more troublesome form of irrita-

bility of stomach is found in chronic gastritis, associated sometimes with ulcer, sometimes with strumous or chronic peritonitis, or with phthisis; here we have an inflammatory condition, as well as one of extreme irritability, and the best means of affording relief is by the use of demulcents and anodynes previously mentioned.

Calomel is used by some as a sedative to the mucous membrane of the stomach in these cases; but since this condition is so frequently found associated with an anæmiated chlorotic or hysterical state, the administration of mercurials, except as alteratives or aperients, is better avoided.

Another form of dyspepsia, which primarily arises from the condition of the nervous system, has been noticed in reference to deficient secretion of gastric juice; the dyspepsia in hypochondriasis, in an overworked brain or imperfectly-developed cerebrum, is exceeding distressing to the patient, and trying to the physician.

The whole attention is occupied by the diet, the mind is depressed, and its energies enfeebled; one change after another is tried, but pain and discomfort equally follow; the bowels are over-anxiously watched, the sleep is unrefreshing, and life rendered miserable. To tell the patient nothing is the matter would be to drive him to some one who would give an opinion more in unison with his feelings. By carefully regulating the diet and the bowels, by cold sponging, by taking frequent exercise, either walking or on horseback, or a pedestrian tour where it is possible, and keeping the mind free from anxiety, all the symptoms may be greatly relieved.

In some men we observe a state closely resembling hysteria; flatulence, loss of appetite, sensibility of the surface of the abdomen, almost amounting to globus hystericus, disturbed cerebral function, depression, anæsthesia, &c.; in this condition I have found marked benefit result from the use of aloes combined with steel; fresh air and exercise are important where they can be attained.

In cases much resembling these, the head is badly formed, the forehead narrow, the body may be well nourished, but the patient complains of pain at the scrobiculus cordis and in the back, or in various parts of the body; the mind is depressed, and the appetite irregular. Although muscular, a man may be quite incapacitated for exertion; the tongue may be clean, the bowels regular, the evacuations normal, or pale, the pulse tolerably full, or depressed and irregular. It would seem that dyspepsia has arisen from the ordinary causes, the sympathetic nerve reacts upon the cerebro-spinal centres, and they being easily disturbed from their healthy balance, again react upon the sympathetic nerve, perpetuating and aggravating the original and slight malady. In this we find the close connection between dyspepsia and disordered chylopoietic viscera, with mental disease, mania, or melancholia.

HÆMATEMESIS.

Vomiting of blood is a symptom which is exceedingly alarming to a patient, and very naturally so, for although in many cases comparatively harmless, in other instances it is the indication of very serious, if not necessarily fatal disease.

1. It arises from ulceration of the stomach.
2. From congested or obstructed portal circulation.
3. From vicarious menstruation.
4. From cancerous disease.
5. From vitiated condition of the blood, as in purpura.
6. From aneurism.

It is simulated by disease of the mouth, throat, or œsophagus; as cancerous disease, ulceration, or aneurism opening into the œsophagus; and lastly, hemorrhage from the lungs is sometimes with considerable difficulty distinguished from that taking place in the alimentary canal; it may be swallowed, and afterwards vomited.

Blood effused into the stomach varies in quantity, sometimes being small, but more frequently it is very considerable, several pints being discharged at once; where it arises from ulceration extending into one of the arteries of the stomach, or from the rupture of an aneurism, it may be so considerable as to be speedily fatal. The symptoms which precede are, sense of faintness, followed by weight at the scrobiculus cordis; the countenance is pallid, the pulse compressible and failing, the extremities cold, and sometimes actual syncope takes place; vomiting is produced, and several pints, or even quarts, of half coagulated blood are ejected; the patient becomes faint, blanched, and the bleeding is checked for a time, unless the vessel is of such a size as to lead to immediate death; after a few days or hours, there may be a return of hemorrhage, till at last, in some cases, the patient appears drained of blood.

The blood is generally clotted and dark in colour, differing in this respect from that which is brought from the lungs; the latter being frothy and high coloured, from the admixture of air. A portion of blood becomes mixed with gastric juice, it assumes a darker colour, and passes into the duodenum; it gradually extends through the small and large intestine, assuming a still deeper colour, and at last is discharged as a pitchy liquid stool, constituting malæna; when blood is effused directly into the small or large intestine, this dark color is not produced; in hemorrhage into the stomach, malæna is sometimes the only symptom.

The coffee-grounds substance which is vomited towards the close of cancerous disease, or of ulceration of the stomach, or in other disease where portal congestion exists, consists of blood which has slowly exuded, the hæmatine being acted upon by the gastric juice. In some cases of purpura also, the blood assumes the same kind of appearance, but it has exuded more slowly.

The symptoms accompanying, or rather preceding hæmatemesis,

vary according to the cause; thus, in ulceration of the stomach, or in cancerous disease, we have generally the dyspepsia, and symptoms of those diseases (*see* Ulceration and Cancer of Stomach); in aneurism, a pulsating tumour, pain in the course of the spinal nerves; in congested portal system, the signs are those of engorged liver, and dyspepsia from deficient gastric secretion, pain in the right side, enlarged liver, sallow or semi-jaundiced complexion, furred tongue, occasional nausea or vomiting, impaired appetite, spasmodic pain at the stomach or colic, bowels constipated, disturbed sleep, and pain in the head, hæmorrhoids, &c.

CASE LXVI. *Hæmatemesis, from cancer of the liver.*—The most marked case of hæmatemesis and mælena from this cause that I have ever witnessed, was in a man about 55 years of age, in an emaciated condition, cachectic and semi-jaundiced; the liver was enlarged, and it was believed that he suffered from cancerous disease of that organ, which was found after death, to be the case. He was suddenly seized with violent vomiting of blood, and black stools were passed from the bowels; in about eight hours he died. On inspection, we found cancerous disease of the liver; there was no ulceration in the stomach or evidence of ruptured vessel; the intestine contained a considerable quantity of blood, but no ulcer. On opening the vena porta, it was found that the cancerous disease had extended into the vessel and completely occluded it, and that cancerous softened effusion was injected along the branches of the porta, so as completely to check the circulation. The cause of the hæmatemesis was at once apparent: the capillaries of the stomach had become suddenly engorged with blood, and had ruptured, leading to the fatal hæmatemesis; but no openings, no ruptured vessel, could be found, nor could we expect to find them; the distension had disappeared, and the minute vessels collapsed. The same is the case in many instances of vomiting of blood after intemperance.

Much discussion has arisen as to the transudation of blood through unruptured capillaries; if, however, any one will take the trouble to examine a portion of intestine distended with blood from diseased mitral valve, and presenting spots of ecchymosis, he will observe what is probably the course of the change which takes place: some of the capillaries are found beautifully injected, and others are collapsed, with blood extravasated around them, but restrained by the basement membrane, thus constituting a point of ecchymosis; if the basement membrane had given way, the escape of blood would have emptied the capillaries, and no ruptured vessel have been observed.

A similar action takes place in the stomach; we find ecchymosis there, but the action of the gastric juice prevents our observing the changes with the same facility; there is little doubt that the capillaries in this way are over-distended, then ruptured, and constitute the ordinary form of hæmatemesis when no ulceration has taken place. In vicarious menstruation, the local congestion of the mucous membrane leads to similar transfusion of blood; in these cases, we may have very slight symptoms, absence of the proper menstrual discharge, slight pain in the side, and there is a periodical vomiting of blood, without constitutional disturbance, or the blanched countenance that we find from other causes. With this vicarious discharge we not unfrequently find hysteria, neuralgic pains, leucorrhœa, &c.

In purpura hæmorrhagica there is a blanched countenance, faintness, &c., but we have indication of the cause in the changed cha-

racter of the blood, and its effusion from other mucous membranes, and into the skin. The hæmatine is probably acted upon, and the corpuscles broken down, so that actual exosmosis of coloured serum will take place.

As to the blood being poured out from the œsophagus or mouth, it is then regurgitated or ejected without effort, rather than vomited, and we generally find either dysphagia or ulceration of the throat, &c.

The blood from the lungs is sometimes so retained in a vomica or dilated bronchi, that it loses its frothy appearance and florid colour, and the patient is often scarcely able to tell us whether he vomited or coughed it up; no actual cough may be produced, but the blood be easily brought up into the throat and then spat out—or it may be swallowed and then vomited, or discharged by the bowels; in these cases we attach much importance to the general signs of disease, and to the physical examination of the lungs and heart.

As to the prognosis, we must ever bear in mind that it is rare for a patient to die from simple hæmatemesis, although such cases occur: patients appear to be almost bloodless, but steadily convalesce.

In the treatment: where it arises from ulceration or cancerous disease, the use of styptics is advisable: alum with dilute sulphuric acid, acetate of lead, gallic acid, catechu, tincture of iron, or oil of turpentine, may be used; but in cases where it arises from congestion of the liver, I have generally looked upon the hæmatemesis as to a great extent curative, and prescribed remedies calculated to relieve the congested liver, as a grain or two of blue pill with conium, and magnesia mixture, to remove the effused blood from the intestines. After the congestion had ceased, the hemorrhage stops; we may then gradually give light food and vegetable tonics with mineral acids, and the preparations of steel. We shall be often much disappointed by the various astringents, gallic acid, alum, &c., which afford only partial relief; oil of turpentine, in doses of \mathfrak{m} xx, has been much recommended, and has been followed by beneficial results; its stimulant as well as astringent effects have been well marked.

It is exceedingly important that the patient should avoid those habits or excesses which have led to the disease, but advice on this subject is generally disregarded.

In vicarious menstruation our efforts should consist in endeavouring to establish the proper and natural discharge, rather than immediately to check that from the stomach, unless it be excessive. Hip baths, steel, aloes and myrrh, change of air, exercise, the avoidance of all tight lacing or unnatural excitement, will probably restore the health, but this hæmatemesis will sometimes go on for a great length of time.

CASE LXVII.—*Anæmia. Strumous subjects. Vomiting and diarrhœa every other day, after parturition.*

Ellen M—, æt. 26, living in Kennington, was admitted into Guy's under my care. For two and a half years she had been married, but six years ago resided in a low marshy locality in Cambridgeshire, as lady's maid; while in that capacity loss of power and vomiting obliged her to give up her situation, and she returned to her native place, Lynn, in Norfolk.

Her father and sister died of phthisis; and she appeared to have had delicate health, being subject to syncope.

She had had two children, and the youngest was, at the time of her admission, seven weeks old. In her first pregnancy she was much prostrated by vomiting, and was unable to take animal food; after parturition she partially recovered her strength, but in a month the sickness and faintness returned; on again becoming pregnant she lost these symptoms, and felt well till the seventh month, when they returned with such severity as to oblige her to keep her bed a month before delivery. There was but little blood lost in labour, but on the sixteenth day she was again seized with vomiting, which gradually increased in severity; there was diarrhoea at the same time as the sickness, and these symptoms came on every other day, on the intermediate days the patient feeling cold and chilly.

She was a spare woman, much emaciated. At night she perspired, and had disturbed sleep; the bowels were relaxed, she had the disposition to take food, but the stomach rejected it soon afterwards; pulse sharp, compressible, &c. There was systolic bruit over the region of the aortic valves, no physical sign of pulmonary disease, but she had a slight cough; urine pale and normal.

In this case, symptoms of irritability of the mucous membrane of the alimentary canal were brought on apparently by sympathetic connection with the uterus. It came on first during pregnancy, ceased for a short time after labour, and with her second child the same symptoms occurred. Sickness is one of the ordinary symptoms of early pregnancy, but here this irritability has been perpetuated by some unusual susceptibility of the mucous membrane, or of its nervous centres, and aggravated by a strumous diathesis.

This state is sometimes symptomatic of organic disease of the mucous membrane of the uterus, but we had no proof that such was the case here.

There was remarkable periodicity, a kind of tertian irritability of stomach and intestines, on every other day vomiting and diarrhoea, alternating with coldness and chilliness. Long residence in a miasmatic district had probably given this periodicity to the symptoms, and aggravated her anæmic condition.

As to the treatment: the diarrhoea was checked by starch enemata with opium, and steel in the form of the ammonia tartrate of iron prescribed; but quinine gave more relief, at first combined with tris-nitrate of bismuth and conium in the form of pill, afterwards with steel. The irritability of the stomach subsided so much that she was shortly able to take animal food; the countenance became less blanched, the spirits less depressed, the diarrhoea almost disappeared, and the systolic bruit became inaudible; by a perseverance in the use of these means she continued to improve, and left the hospital convalescent.

The two following cases may be adduced as instances of forms of hæmatemesis of very frequent occurrence.

CASE LXVIII. *Hæmatemesis, vicarious menstruation, aggravated hysteria simulating fever.*—Mary H—, æt. 19, was admitted into Guy's under my care in May, 1855. She had enjoyed good health till she was sixteen years of age, when she said that she had a convulsion followed by "brain fever;" and on recovery began to vomit blood three days successively at regular monthly periods; if this did not occur she had pain between the shoulders, at the epigastrium, and dyspnœa; this vomiting of blood continued regularly for three years, but she never menstruated properly. For nine months the discharge had ceased altogether; and three months before admission she had a severe hysterical or epileptic fit.

On admission she appeared stout, tolerably nourished, but prostrate, the tongue dry and brown, almost black; she lay motionless in bed, without speaking, and altogether refused food, sometimes groaning, and if taken from her bed appeared to faint. She complained of pain at the lower part of the back, and in the inguinal region; the abdomen was tympanitic and distended; she stated that twice surgeons had removed clots of blood from her; but my friend and colleague, Dr. Oldham, could find no enlargement or disease of the uterus, and believed that an attempt had been made to divide the os uteri. She refused to swallow food, the pulse was feeble and very quick. There was slightly increased antero-posterior curvature of the spine in the lower part of the dorsal region.

Milk was poured into the mouth, and she was *made* to swallow it: in this way a considerable quantity of food was taken.

Galbanum and zinc with aloe and myrrh were prescribed, and the bowels were thoroughly cleared by blue pill with colocynth and henbane, and by enemata of rue or soap. Local depletion was used from the groins by the application of leeches, and afterwards quinine and steel were given with wine, and sparks of electricity taken from the spine; a shower bath was occasionally used.

The stomach retained food, and the patient soon became able to walk, and left the hospital in a few weeks convalescent.

This was one of the most severe cases of hysteria that is usually witnessed, and the disturbance of the stomach and alimentary canal were no doubt produced by the functional disease of the uterus, aggravated by treatment which I think few obstetricians would approve of.

CASE LXIX. *Hæmatemesis after great intemperance.*—Alfred W—, æt. 38, admitted into Guy's under my care in May, 1855.

He was a tall man, perfectly blanched in appearance, and on admission almost in a state of syncope.

He had been for some time a porter at the Brighton Railway; had drunk very freely of spirits, and was accustomed to eat but little food. During the Epsom races, having harder work than usual, he drank still more intemperately; he had been troubled with occasional pain at the stomach, and with vomiting.

The day before admission he felt a sense of weight at his stomach, which he tried to relieve by taking more spirits; a feeling of faintness came over him, and he vomited several pints of dark-coloured blood.

He was much excited, and there was considerable tremor of the hands. The skin was moist, the tongue and lips pale, the bowels confined. The liver was much enlarged, and there was slight tenderness at the scrobiculus cordis.

There was evidence in this case of great engorgement of the portal system, and although some additional hemorrhage took place, I adopted the plan of endeavouring to relieve the distended liver and constipated bowels, rather than of administering styptics. Blue pill and conium were given, and magnesia mixture. In this way, black blood acted upon by the gastric and intestinal secretions was discharged, and the patient rapidly improved. The hemorrhage returned slightly on the third day, probably from spirits surreptitiously obtained.

He steadily, however, convalesced; food was given as he could take it, and afterwards steel.

Most of these cases arise from rupture of over-distended capillaries, rather than from ulceration, and we may generally give a very favourable prognosis. When ulceration exists, and arteries are perforated by the disease, a fatal result sometimes ensues; several cases of this kind are recorded with ulceration of the stomach, in one of which, although fatal hemorrhage took place, nearly all the blood passed into the duodenum, and scarcely any was vomited. Death, however, does occasionally follow without any ulceration being detected.

CHAPTER V.

DUODENUM.

VARIOUS writers have described symptoms of disease which they have attributed to the duodenum, whilst others have referred them to the stomach or to the liver.

My own observations, and the facts I adduce in the following remarks, show that there are symptoms of disease justly considered as arising from this portion of the alimentary canal; and that, in some cases, we may, with care, satisfactorily diagnose that this part is diseased. The peculiarities of its position and structure deserve our careful attention; extending from the pyloric extremity of the stomach to the jejunum, it is about twelve inches in length, and may be divided into three nearly equal portions; the first is the most movable, is more surrounded by peritoneum, and horizontal in its direction; it may be called the pyloric or stomachic portion of the duodenum, for it is associated with the diseases of the stomach. The second is vertical in direction, closely fixed near to the crura of the diaphragm, and to the vena cava; it receives the common bile and pancreatic ducts generally by a single opening. The pancreas is situated on its left side, the vena porta, the hepatic artery, and the branches of the pancreatico-duodenal artery are in relation with it. The third is horizontal in direction, having the pancreas above it, and in front, the superior mesenteric vessels entering the commencement of the mesentery, it is situated upon the aorta and vena cava. The three portions of the duodenum are situated on *different planes*, the first portion being nearer to the anterior abdominal parietes, the third part immediately upon the spine; and this arrangement allows the contents of the canal, the chyme, mechanically to gravitate quickly into the jejunum, and assists the discharge of bile from the ducts.

The muscular layers are double, a circular, and a longitudinal coat, as in other portions of the small intestine.

The mucous coat is covered with villi, which commence at the duodenum, and soon become exceedingly numerous; so also the valvulæ conniventes are gradually developed, till we find them as large as in the jejunum. The whole of the surface is studded over with Lieberkuhn's follicles; not unfrequently, especially in young subjects, there are solitary glands, as in the jejunum and ileum.

Besides, there are the glands of Brunner, peculiar to the duodenum, minute compound glands, situated beneath the substance of the mucous membrane; these commence a few lines from the pylorus, and extend about as far as the common bile duct. Their function is not definitely known, but they are believed to resemble minute salivary or pancreatic glands. It sometimes happens that the solitary glands are so distinct that they may very easily be mistaken for Brunner's glands; the latter are, however, situated beneath the membrane, and microscopical examination at once manifests their difference.

There is still another point in connection with the duodenum that deserves consideration, and which indicates its close connection with the stomach and with the liver. The pneumogastric nerves, branches of which supply the stomach, and also the liver, send filaments along the first portion of the duodenum, continued onwards from the lesser curvature of the stomach; this associates that part of the duodenum very intimately with the stomach.

The pancreatico-duodenal artery, which supplies the greater part of the duodenum, is from the hepatic, and the pyloric branch of the coronary extends into the first part of the duodenum, so that in the arterial supply we find the same association.

State of secretion.—The secretion is stated to be alkaline, and such is probably the case; the acid reaction, after death, probably arises from the gastric juice, which has gravitated through the pylorus. Whether a patulous feeble contractile power in the pylorus, allowing the secretions of the stomach to pass at irregular periods into the duodenum, is the cause of any of the discomforts associated with the forms of dyspepsia, we have no data on which to form an opinion. Few conditions of imperfect development have been observed in connection with the duodenum.

Congenital malformation.—The duodenum is sometimes observed to have a double twist, firmly fixed to the spine before it joins the jejunum: this I observed in a case of intestinal obstruction, in which the cæcum was twisted over to the right side of the abdomen, and the ascending colon adherent to the sigmoid flexure. The person had been born at the seventh month, and the cæcum was preternaturally free.

In a cyclopean monster, in which the viscera of a double fœtus existed in a single peritoneal cavity, a double œsophagus was found united in a single stomach, with a large convexity extending from side to side, and giving rise to a single duodenum, placed vertically, and receiving the biliary and pancreatic ducts on either side.

Diverticula have been noticed, but are exceedingly rare as compared with those arising from the lower part of the ileum; the pouches in the duodenum consist generally of mucous membrane, and might be considered as a form of hernial protrusion of that membrane: in the museum of Guy's is one situated near the opening of the duct into the duodenum.

Some believe that the duodenum becomes distended with flatus, or with retained chyme, and that these are the result of indigestion; where there is mechanical obstruction, which we shall afterwards describe, this may be the case, in disease of the pancreas, or in cancer, or impacted gall-stone, &c.: and it is possible that an enormously distended transverse colon may impede the free passage of the contents of the third portion, but such is problematical. The distension which has been supposed to arise from the duodenum, will generally be found to be from the stomach or transverse colon; the duodenum passes quickly to a lower level, and I believe its contents at once gravitate into the jejunum.

As to the strictly pathological states, we find congestion, sometimes active, more frequently passive; and ulceration, or obstruction.

To some it may appear altogether futile to speak of congestion or hyperæmia of the duodenum, but observation of the appearances after death convinces me otherwise, that marked changes of this kind occur, and in some instances a careful investigation might have pointed out their existence during life.

Great congestion of the duodenum is observed in various diseases, where the whole tract of the alimentary canal is in a similar condition, as in disease of the mitral valve, and portal obstruction in hepatic disease; but there are other cases in which we find it in an active state, or the condition of the mucous membrane evinces that congestion of some continuance has left traces of its existence. The latter may be considered as active hyperæmia of the part, and the following case illustrates the condition to which reference is made:—

CASE LXX.—*Inflammation of bronchi, of bile ducts, or biliary hepatitis, &c. Inflammatory congestion of the duodenum.*—Thomas H ———, æt. 42, was admitted into Guy's Hospital, March, 1852; he had been ill for three weeks. He was a large, stout man, who for fourteen years had been in the police service; his habits of life had been very intemperate. Four years ago he had a severe blow in his right side from a prize fighter, and for some time he had been subject to vomiting in the morning, and the bowels had at times been much relaxed. Previous to his admission jaundice came on; he had more anxiety of mind than usual, and gradually became languid and ieteric. Four days before admission his legs began to swell, then his abdomen, and he became prostrate. The skin was of a dusky yellow colour; the tongue was dry, brown, and furred; respiration 44; the pulse 100, soft and compressible; the abdomen was much distended with flatus, and fluctuation could also be felt; the liver extended several inches below the ribs, and there was tenderness on pressure in that part. In the chest there were general bronchial râles; he was delirious at night, and slept but little; the motions were light in colour, the bowels relaxed, the urine contained the colouring matter of bile and lithates. Three days after admission he was more prostrate; still delirious; the pulse was very compressible; he had pain in the right hypogastric region, and on the following day he died.

On inspection there was found to be severe capillary bronchitis: the larger bronchi were also inflamed; they were somewhat congested, and contained yellow-coloured tenacious mucus. The heart was large, and had around it a considerable quantity of fat; the right ventricle was thin; the left ventricle had undergone partial fatty degeneration. The valves were healthy, with the exception of slight thickening of the mitral. *Abdomen.*—There were several pints of yellow serum in the peritoneum; the intestines were considerably distended with flatus, and the liver extended several inches below the ribs. The duodenum contained *bloody mucus, the lining membrane was very much congested, and in some parts ecchymosed.* The lower part of the small intestine con-

tained clayey feces. There was a considerable quantity of fat in the omentum, and in the abdominal parietes.

The liver weighed 7lb, its surface smooth, and of a deep greenish-yellow colour; the acini were whitish, and some veins were seen upon the surface. The section of the liver appeared coarse along the smaller branches of the vena porta, the capillary vessels in Glisson's capsule appeared much distended, some of them quite turgid with blood. The lining membrane of the smaller biliary vessels was congested, and contained tenacious mucus; this state of the bile ducts contrasted remarkably with the pale colour of the vein. The cells of the liver were gorged with fat, some of them quite distended with oil globules; other hepatic cells appeared ruptured, the granules and oil globules dispersed upon the field. The deep green spots did not present any cells, but homogeneous matter with granules.

The larger bile ducts appeared to be perfectly free, but the opening into the duodenum was very much congested, the gall-bladder was empty; kidneys large and congested; spleen firm, and contained several fibrinous masses.

The health of the man was much impaired by his intemperate habits; his liver was probably partially diseased for a considerable period. The affection of the chest came on subsequent to his admission into the hospital, and, consequently, after the jaundice. There was evidently inflammatory action of the smaller biliary tubes, as indicated by the congestion of Glisson's capsule, the congestion of the lining membrane of the biliary tubes, and the tenacious mucus they contained; bile appeared to have been separated from the blood, but to have been retained in the hepatic structure. The bronchitis which subsequently took place was, perhaps, the cause of the fatal termination, and tended, doubtless, to increase the congestion of the mucous membrane. The very congested state of the duodenum, near the entrance of the bile duct, indicated an extension of disease from the duodenum to the bile ducts, or *vice versâ*; it was much more *localized* than is observed in the secondary congestion of the mucous membrane in pulmonary obstruction. This did not appear to be an affection in which much benefit could be obtained from the administration of mercury, but rather salines with sedatives.

After burns the mucous membrane of the duodenum has been found greatly congested, and in several cases recorded by Mr. Curling, in the *Medico-Chirurgical Transactions*, ulcerated. This has not been confirmed in the observations of Dr. Wilks, in the Guy's Report for 1856, many of which cases I witnessed; and although in some the first part of the duodenum was hyperæmic, in none did I observe ulceration. Such a case, however, is placed in the Museum at Guy's, in which Dr. Gull has drawn attention to a small ulcer existing at this part. The child survived twenty-five days, but died comatose; a small cicatrizing ulcer was found in the first part of the duodenum.

Mr. Curling describes diarrhœa, and the discharge of blood, as having arisen from this condition of the duodenum, and sometimes severe hæmatemesis and prostration. In some, death took place from peritonitis consequent on perforation. After such severe injury to the skin, it is not surprising to find great disturbance of the circulation or of the internal organs, and especially of the mucous membranes, which are known to sympathize so closely with the skin; in

some of these cases stimulants appear to have been administered freely, and these have probably conduced to this inflammation of the duodenum.

Chronic congestion.—This state produces gray discoloration of the membrane. In the examination of this discoloured part, we find that it is produced by the deposit of irregular grains of pigment, very thickly placed in the substance of the mucous membrane, near its upper surface, probably in the coats of the capillaries; the apparent explanation of this state being, that gastro-enteritis, or long-continued hyperæmia, has been followed by the deposition of hæmantine or pigment in the substance of the membrane.

In several cases of this gray discoloration the appearance has been uniform, both in children and in adults. A child, æt. 9, a thin, poorly nourished, pale boy, who had been subject for some time to looseness of the bowels, whilst running hurt his thigh; he shortly afterwards complained of pain at that part; he was admitted into Guy's in a typhoid state, and died two days afterwards. There was suppuration in the brain; and gray discoloration of the mucous membrane of nearly the whole of the small and large intestine.

Chronic congestion is observed, as before stated, in connection with pulmonary or hepatic congestion, any disease which leads to distension of the vena porta; but we shall find a less general condition of congestion of the first part of the duodenum in disease of the pylorus, whether simple fibroid degeneration and hypertrophy, or true cancerous disease. The mucous membrane becomes thickened, its vessels congested, and its glands enlarged; sometimes, indeed, so much so, that they might easily be mistaken for minute cancerous tubercles. The constant irritation has led to hypertrophy of the glands of the mucous membrane, as we find the tonsils not unfrequently become hypertrophied.

The duodenum is sometimes found, after death, to be filled with blood; even a coagulum is occasionally moulded into its exact form. This is due to extravasation of blood from ulceration, and perforation of an artery, in the duodenum or in the stomach.

As to the symptoms arising from the conditions just described, they appear to be so continually bound together with those indicative of simple disease of the contiguous viscera, that definiteness and certainty cannot be attained. The vomiting and pain connected with hepatic disease and gall-stone are possibly due partly to the condition of the duodenum. In the latter there is probably spasmodic contraction of the canal; but of this we do not speak with certainty. In the cases described by Mr. Curling vomiting was a frequent symptom; and of this we are not surprised, from the supply of the pneumogastric to the first part of the duodenum, rendering the connection between it and the stomach more intimate. The bilious evacuation in violent vomiting indicates that the first and second portions of the duodenum have been involved.

In jaundice, after exposure to cold, or after great intemperance,

with vomiting, pain in the right hypochondriac region, furred tongue, loathing of food, and diarrhœa, not only the stomach, but the duodenum is irritated and congested, if not inflamed.

In the treatment of these cases mercurials do not appear to be advantageous, but detrimental. The most bland nourishment, abstinence, when possible, from stimulants, and the administration of salines, as solution of potash, or the bicarbonate or carbonate of soda, with mucilaginous drinks, are the best means of relieving this state. But with these we must induce free action of the bowels, so as to relieve portal congestion, either by enemata, by saline purgatives, by full purgative doses of calomel with colocynth, or by the application of leeches to the anus or to the scrobiculus cordis.

The most *acute* form of *inflammation* is sometimes observed after the administration of poisons. In a case of poisoning by sulphuric acid, where several square inches of the mucous membrane of the stomach had been destroyed, the duodenum was found intensely congested, and covered throughout by a thin, adherent, diphtheritic membrane. In this case the vomiting and dysphagia disappeared on the third day, and the patient, though extremely prostrate, did not appear to suffer much from pain. Arrowroot, lime-water, and milk, &c., were administered, and for a week it was thought that the patient might rally. (*See Diseases of Stomach.*) In ordinary practice, however, we do not meet with this form of disease.

Ulceration.—Like that of the stomach, the ulceration of the duodenum varies exceedingly in degree and extent; sometimes being merely superficial, and associated with other diseases, as was found in a patient who died in Guy's, from albuminuria with pericarditis, in whom the duodenum presented superficial ulceration, the result of erythematous, or acute inflammation; or there may be chronic ulcer, resembling that found in the stomach, and presenting many symptoms in common with that disease.

Some are observed to have raised thickened edges and depressed centres, apparently of slow formation, and gradually to have extended to the deeper structures, mostly found in the first portion passing through the muscular and the peritoneal coat, and leading to fatal peritonitis, or producing adhesions with adjacent structures, which constitute the base of the ulcer. Several such cases have come under my own notice, the early symptoms of which were exceedingly slight, till sudden and fatal peritonitis has been set up by perforation. In some instances it has been associated with violent vomiting, and the persistence and aggravation of the vomiting were attributed to this diseased condition.

A young woman, æt. 24, was admitted into Guy's, with very urgent vomiting; the pulse was small and frequent; she was pregnant, and died in a short time from peritonitis: a small ulcer was found in the duodenum.¹ The ulceration may be found in the

¹ Dr. Hodgkin on Pathology of Serous and Mucous Membranes.

second portion, as in a case preserved in the Museum of Guy's, where the coats of the whole of the vertical portion on the pancreatic side are destroyed, and the pancreas forms the base of a large chronic ulcer, in the centre of which is seen the opening of the biliary and pancreatic duct: there was a small ulcer in the third portion of the duodenum, and peritonitis; the pancreas was enlarged. The patient, Samuel R—, was 44 years of age, and had empyema; he became exceedingly emaciated before death, and had vomiting as well as discharge of blood per rectum. The ulceration is sometimes followed by contraction and constriction, as in the case recorded by Dr. Barlow, in the Guy's Reports. The treatment pursued must be the same as that of ulcerative disease of the stomach.

Adhesions frequently take place between the first part of the duodenum and the gall-bladder; and in some, ulceration extends from the gall-bladder into the duodenum, allowing the passage of calculi; and the gall-bladder is, in some cases, entirely obliterated.

Pain several hours after food, sallow complexion, furred tongue, feebleness of circulation, mental depression, nausea, irritable bowels, have been ascribed, in some cases, to ulceration of the duodenum, but the facts do not warrant us in such precise description. In the several instances we have observed, there were no such indications; in some, there had been disease of the gall-bladder; in others, chronic disease of the liver; and the predisposing and exciting cause of the one has probably induced the other.

Ulceration of the duodenum must be remembered both as the source of fatal perforation and of intestinal hemorrhage.

CASE LXXI. *Ulceration of the duodenum. Perforation.*—George E—, æt. 30, a man of light complexion, and of steady and temperate habits, was admitted into Guy's, October, 1831. He was by trade a surgical instrument maker, and accustomed, when at work, to exercise pressure against the umbilicus. Four months before admission he had slight expectoration of blood, but it was doubtful whether it proceeded from the lungs or stomach. On October 20th, whilst apparently in good health, he suddenly experienced severe pain in the abdomen; to use his expression, he was "doubled up;" he fell down in a fainting state, and was taken into a druggist's shop, who administered ammonia, and some castor oil. The pain was situated on the right side. On admission, he was in a state of collapse; the pain of which he complained passed in the course of the ureter. On the following morning he was exceedingly depressed, skin hot, the abdomen tender, and there were the symptoms of general peritonitis; vomiting of coffee-grounds fluid came on, and pulsation was felt at the scrobiculus cordis, which suggested the idea of aneurism. He survived fifty-six hours. On examination, the peritoneum was found to be intensely inflamed, lymph was effused, and castor oil was found floating in the peritoneal cavity. At the first part of the duodenum, about one inch from the pylorus, an ulcer was found about the size of a shilling, and at its base a circular opening about the third of an inch in diameter. In the stomach several small aphthous ulcers were observed, and two small ones were covered with small coagula. The remaining parts of the small intestine were healthy; so also the cæcum, colon, kidneys, spleen, and liver.

In the chest there were old pleuritic adhesions on both sides, especially on the left, where there was also a small vomica, indurated lung, and thickened tubes.

The patient was only 30 years of age, and, as he believed, in good health, though evidently of feeble constitutional power, as

indicated by the condition of the lungs and the previous hæmoptysis; he was doubtless phthisical, but the disease of the duodenum resembled, in its insidious character, the corresponding disease of the stomach, and gave no previous indication of its existence.

The treatment of the patient, before his admission, precluded all chance of recovery; but such, unfortunately, is too frequently the case. Brandy and castor oil, probably both, found their way into the peritoneal sac, and the necessary removal of the man, at first into a druggist's shop, then to his own home, and afterwards a considerable distance to the hospital, tended to induce increased extravasation and peritonitis; the judicious administration of opium prolonged life many hours.

As to the cause, the stooping posture at his work probably assisted to produce the disease; but this is involved in much obscurity.

The position of the pain did not point out the seat of the perforation, but this is only what has frequently been observed in a case of gastric ulcer; the pain was principally in the right iliac fossa, and it was believed that the ileum, or appendix cæci, had given way.

Mr. Travers, in the *Medico-Chirurgical Transactions*, mentions a case of perforation of the duodenum, about a finger's breadth from the pylorus, in a gentleman, æt. 35, who was strumous, but considered to be in good general health.

There was a large irregular ulcer, with a small perforation, which led to fatal peritonitis and death in 13 hours; the perforation took place a short time after a meal, which will, I believe, be found to be generally the case.

CASE LXXII. *Chronic ulcer in the duodenum. Carcinoma of the liver. Jaundice. Granular kidneys. Obliteration of bile duct.*—George C—, æt. 46, admitted into Guy's, December 14th, 1853, and died January 4th. For a fortnight he had had jaundice, vomiting, and typhoid symptoms, and for three months, after exposure to cold, he had had œdema of the lower extremities. In the liver were six or ten carcinomatous tubercles; the bile duct was obliterated near its opening into the duodenum, and throughout the liver the ducts were very much distended; the cells of the liver were normal. In the first portion of the duodenum was a chronic ulcer, about an inch in diameter, with raised thickened edges, but not cancerous in its character; the rest of the intestine healthy; kidneys large, their surface irregular and granular.

The disease in the duodenum was not known till after death; the cancerous condition of the liver, inducing pressure on, and obliteration of the ducts, and albuminuria, after exposure to cold, appeared to be sufficient to explain all his symptoms. The ulcer in the duodenum, however, was in a chronic and passive condition, but nothing was ascertained as to its cause: we suppose that intemperance increased it. We rarely find such a complication of disease, cancer of the liver, acute disease of the kidney, probably an already unhealthy gland, and the condition of the duodenum just mentioned. It is exceedingly common to find, after death, that adhesions have taken place between the *first* portion of the duodenum and adjoining

viscera, either the inferior surface of the liver and gall-bladder, or the transverse colon. We are not aware of the symptoms arising from this state, whether there be any impediment to the escape of chyme from the stomach, and consequent heartburn, &c.

Mechanical obstruction.—Other parts of the intestine are much more liable to obstruction of a mechanical character than the duodenum. In the course of several years we have observed, or found recorded, isolated cases of this kind, arising from the following causes:—

1. Gall-stones, of large size, having ulcerated through the coats of the gall-bladder, have become impacted in the duodenum, and led to fatal obstruction.
2. Enlarged glands, infiltrated by cancer, compressing the second or third part of the duodenum.
3. Diseased pancreas.
4. Hydatid disease of the liver, opening into the duodenum.
5. Foreign bodies.

In the first and second cases, the symptoms resemble those of internal strangulation of the intestine, or hernia, but the vomiting was very early set up, and of a very severe character, though of course not stercoraceous. The diagnosis must generally be obscure and difficult. Gall-stone, without any such impaction, induces intense pain and vomiting: where we have the symptoms of gall-stone, which are generally sufficiently well marked, followed by insuperable obstruction, we may diagnose the cause clearly; but in the slow ulceration of a large gall-stone through the coats of the gall-bladder into the duodenum, the symptoms may be exceedingly slight.

The obstruction is generally in these cases near the termination of the duodenum, or in the jejunum.

In obstruction from diseased glands, these structures and parts are not the only ones affected, though the immediate cause of death. Thus, in the case recorded, with all the symptoms of strangulation there was femoral hernia; this was returned; but still the symptoms persisted till death, when it was found that the terminal part of the duodenum was firmly impacted between two enlarged glands.

CASE LXXIII. Obstructed duodenum from biliary calculus obstructing the upper part of jejunum, thirty inches from pylorus.—The calculus is in the museum at Guy's. The case was under the care of Ebenezer Pye Smith, Esq., and recorded in the *Pathological Transactions* of 1854. The patient was a stout woman, æt 69; she had good health till three months before death, when she suffered slight pain in the right hypochondrium, which continued a fortnight, unaccompanied by sickness or prostration. She recovered, but continued her usual sedentary habits; five days before her death she began to feel sick, and vomited bile in large quantities; the urine was moderately secreted. The vomiting increased in violence, but with only very slight pain in the abdomen; on the fifth day she became comatose. A calculus composed of inspissated bile, and measuring four and a half inches in circumference by two and a half in its lesser circumference, was found impacted about thirty inches from the pylorus. There was much fibrous tissue on the under surface of the liver, and an ulcerated opening extending from the gall-bladder into the duodenum, below the bile ducts.

The most marked symptom in these cases of duodenal obstruction has been the very early period at which violent vomiting has supervened, and its bilious character. With regard to the quantity of urine secreted being a sign of the seat of obstruction, as mentioned by Dr. Barlow, Guy's Reports, 1844, in the case related, the urine was said to be "moderate," whereas in very early vomiting, but little fluid could be expected to have been absorbed by the vena porta and transmitted to the heart, and so to the kidneys; more than a gallon and a half of bilious fluid was ejected. It is probable, after vomiting had fairly set up, and the gall-stone become impacted at the commencement of the jejunum, so that no fluid could pass, the urine was very much diminished in quantity; and this sign is one worthy of our attentive observation.

The vomiting was not stercoraceous but bilious, and this is of value, as indicative of the obstruction being high up in the small intestine.

The absence of distension of the abdomen is another sign of occluded intestine in its early course. In obstruction of the large intestine, or even at the lower part of the small, the abdomen becomes enormously distended, and the peristaltic movements can often be observed in spare persons through the parietes; this is especially the case in disease of the sigmoid flexure of the colon. The stoutness of the patient in Case LXXII. rendered this sign less observable; again, where this duodenal obstruction exists with hernia, the diagnosis must necessarily be most obscure.

Gall-stone produces, with vomiting and constipation, intense pain in the region of the gall-bladder; this severe character of pain we do not find in intestinal obstruction, but on the other hand it must be acknowledged, that where slow ulcerative absorption has taken place between the walls of the gall-bladder and the duodenum, calculus so extruded is followed by less severe suffering than in ordinary cases of biliary calculus.

A very interesting case, under the care of Dr. Lever, is mentioned by Dr. Barlow, Guy's Reports, 1844:—

The patient, æt. 51, a year before her death had the symptoms of gall-stone, and her bowels afterwards constipated; a short time before her death, excessive pain, vomiting, and constipation came on, with scanty urine and collapsed abdomen.

The gall-bladder and duodenum were firmly adherent, the two upper thirds of the duodenum were contracted, thickened, and would only admit a common quill; about the centre of the ileum was a biliary calculus of the size of a walnut, partially saeculated. Very violent bilious vomiting sometimes takes place in ulceration of the stomach, especially where the pneumogastric nerve is implicated without being destroyed; but here the signs of obstruction are less severe; there is not obstinate constipation.

Dr. Barlow has, in the paper previously cited, dwelt upon the

importance of bearing in mind that in ischuria renalis, violent vomiting, constipation, and scanty urine are sometimes present.

In diseased pancreas the obstruction is less complete, but acts by inducing firm adhesions about the first and second portions of the duodenum; and pressure is also exerted by the increased size and hardness of the pancreas, and by infiltrated glands. The symptoms resemble those of obstructed pylorus, vomiting several hours after food, gradually increasing emaciation, constipation; and these symptoms slowly developed during several months. A tumour can generally be felt near the region of the pylorus.

Dr. Bright believed that the fatty motions which he found in some of these cases were indicative of disease of the pancreas, but this has not been confirmed by subsequent observations.

The course that *hydatid disease* of the liver takes is uncertain; sometimes towards the surface, and a rounded tumour is then felt on the anterior abdominal parietes; or it extends through the diaphragm into the lungs. In a case recently under the care of Dr. Rees, in Guy's, it extended into the duodenum. Hydatids were both vomited and passed by stool, and there was severe vomiting; the patient was exceedingly ill, and a friction sound was audible over the seat of the tumour, evidently from local peritonitis; the patient steadily improved after the evacuation of the hydatids by vomiting; the tumour disappeared, and he left the hospital; but after a few weeks intense peritonitis came on, and he quickly died. The remains of hydatids were found in the liver, and the duodenum, colon, liver, and kidney were firmly united by adhesions. A large abscess existed between these structures, and had led to the fatal peritonitis. No communication existed between the liver and colon; and although the duodenum at its second part was firmly adherent, no direct opening could be found.

The patient was 29 years of age, and had resided at Twickenham; he was temperate in his habits; for nine years he had suffered from so-called "bilious attacks," vomiting, with slight sallowness of the skin; five years ago he had had severe jaundice, which continued for three weeks. Eight months before admission his appetite became ravenous, but he was losing strength and becoming emaciated; for seven weeks he had been confined to his bed from severe pain about the umbilical region; jaundice came on, but disappeared, and was followed by very severe pain in the right hypochondriac region, extending to the loins, and a rounded growth presented itself below the ribs on the right side.

A remarkable instance of mechanical obstruction in the duodenum is recorded by Dr. Blakeley Brown, in the *Pathological Transactions* of 1851 and 1852: A delicate young woman, æt. 18, became gradually emaciated, and at last died from peritonitis. The stomach, duodenum, and upper part of the jejunum contained casts composed of agglutinated interwoven masses of string and hair.

Corpus of the stomach & duodenum

of the stomach & duodenum

Gastric solution of duodenum.—The mucus of the duodenum is frequently found in an acid condition after death, probably from some of the gastric juice slowly gravitating through the pylorus; but in some instances the pylorus is so patulous, that gastric juice readily passes, and exerts its solvent power after death in the same manner as in the stomach. Such a state was found recently in a child who died under my care in Guy's.

CASE LXXIV. *Perforation of duodenum after death by solution of gastric juice.*—William B——, æt. 4 years, admitted July, 1856, and died on the 23d. He was an anæmiated child, with large head; on admission in a semi-comatose state, the pupils widely dilated; he had occasional vomiting, but no convulsions; six weeks previously he had measles, and one week afterwards hydrocephalus gradually became developed; he was in an almost hopeless condition on admission.

Inspection was made 14 hours after death. The arachnoid was greasy, and at the base of the brain there was considerable arachnoid effusion. The ventricles contained 2 oz. of fluid, of sp. gr. 1001. There were miliary tubercles in the lungs and in the bronchial glands.

In the stomach there was considerable gastric solution, the mucous membrane being destroyed; but in the duodenum the intestine was quite divided, all the coats destroyed, and the end of the first portion terminated in an irregular ragged margin. The contents of the stomach were found in the peritoneal cavity.

There were tubercles in the mesenteric glands, and an isolated one in the kidney.

CHAPTER VI.

MUCO-ENTERITIS AND ENTERITIS.

THERE has been considerable confusion in the application of this term; Broussais considered it as inflammation of the colon, Abercrombie as inflammation of the peritoneal and muscular coats; others, again, more particularly apply it to the small intestine as an inflammatory disease, commencing in the mucous membrane, and extending, in severe cases, so as to involve all the coats of the intestine, even its peritoneal investment. These latter and more severe instances correspond to the enteritis phlegmonodea of Cullen; the former, when the mucous membrane only is affected, to his enteritis erythematica.

Watson, Barlow, &c., apply the term only to the more severe cases, inflammation of all the coats, but we shall in this chapter also consider those in which little more than the mucous membrane is affected, called muco-enteritis, and closely allied to the gastro-enterite and gastric remittent fever. Dr. Copland describes follicular enteritis, and ileo-colitis; the former we consider in the remarks on strumous and typhoid disease of the intestine, the latter with dysentery.

Enteritis, then, manifests itself under two forms: 1. That involving only the mucous membrane, and which has a disposition to extend in the course of the mucous membrane—*muco-enteritis*; and, 2. That in which the disease extends in depth, rather than on the surface, and implicates the muscular, peritoneal coats and the connecting tissues; both commence in the mucous membrane.

In hernia, whether external or internal, acute enteritis is set up, and there may be symptoms in common with enteritis, as constipation, vomiting, &c., but their pathology and treatment are so diverse that a separate consideration of them is required.

It would be difficult to draw a defined separation between cases of inflammatory diarrhœa, as described by Dr. West, and the simplest forms of enteritis; they pass the one into the other. Diarrhœa, however, is not an ordinary symptom of enteritis. The bowels in that disease are frequently constipated.

We shall first consider enteritis in the form of *muco-enteritis* or *enteritis erythematica*. It is very frequent among children during dentition or weaning, or after exanthemata; but in many cases of

infantile diarrhœa and colic, a more transient condition is set up, twisting pain in the bowels, the evacuation of watery or green motions, with fretfulness, &c., which pass away in a very short time, and which consist in irritation of the bowels rather than inflammation of the mucous membrane.

In muco-enteritis a child is found to be fretful, without its usual playfulness and mirth. The lips are dry, and it has a circumscribed flush on one or other cheek; the skin is dry or roughened; the abdomen is somewhat enlarged, or considerably distended and tympanitic, and varies in degrees of tenderness; but the restlessness of the child causes it to cry when no pain is produced; it is unwilling to be disturbed; the appetite is irregular and capricious, either craving for cooling drinks, as cold water, or for unsuitable food, which is oftentimes the cause of the malady. The bowels are irregular, constipated for several days, or there is diarrhœa, offensive, pale, or greenish motions, slimy mucus, or food scarcely changed, and these conditions alternate; the tongue has whitish fur, and often its substance or papillæ are much injected; vomiting may easily be induced, and probably often arises from extension of the disease to the stomach, when the disease is called gastro-enteritis. In the evening the child becomes still more restless, the skin hot, and even pungent, its sleep disturbed, and accompanied with grinding of the teeth or starting, it awakes alarmed; in the morning the febrile disturbance is less, and the child may be cheerful and playful.

This aggregation of symptoms constitutes gastric remittent or infantile remittent fever, and many look upon it in the same light as typhoid fever, considering that the inflammatory condition of the intestine is a concomitant, not the essential part of the disease. This is, I think, incorrect; the intestinal disturbance is the source and the cause of the continuance and extension of the disease; and not, as in typhoid fever, the manifestation of a previously existing and general condition.

When the symptoms persist severely for several weeks, greater prostration ensues; the child wastes sometimes to an extreme degree, appears haggard and aged; the lips have dry sordes upon them; the tongue is more injected, and often aphthous. There is less remission in the morning; the child will scarcely sleep at all, or, in very young children, be placed out of the arms of its nurse; the diarrhœa increases, watery evacuations or food unchanged are discharged a short time after having been taken; the pulse becomes very rapid, the eyes half closed, and the child dies from exhaustion, almost before the nurse is aware of any change; or the brain becomes oppressed, and a drowsy, torpid condition, or convulsions sometimes precede death. The convulsions and coma, to which we refer as coming on at the close of this intestinal condition, are closely allied to those produced by exhaustion, as the hydrencephaloid disease of Dr. Marshall Hall.

Muco-enteritis is frequently followed by tympanitis, and by strumous disease of the peritoneum or mesenteric glands. Although the more prominent symptoms of vomiting and purging subside, the child remains wasted, the abdomen enlarged, the appetite ravenous, and exhaustion steadily progresses to a fatal termination. (*See Strumous Disease.*)

In young persons we sometimes find a similar state of muco-enteritis as that described, but without phthisis or strumous disease; the eyes are sunken and bright, the lips parched, the tongue exceedingly injected, red, and beef-like; the cheek occasionally flushed by a circumscribed patch on one or other side; the pulse is compressible, but frequent; the skin dry at one time, at another perspiring; there is thirst, generally loss of appetite, and sometimes great irritability of the stomach; the bowels are constipated, or diarrhœa alternates with constipation. The urine is scanty and high coloured. This condition may persist for many weeks, with gradually increasing exhaustion, and in some cases terminates fatally; in very many instances it yields to judicious treatment, but there is great danger of relapse. In young women this state is sometimes associated with painful or deficient menstruation, or with leucorrhœa, and may be accompanied with severe neuralgic pain in the abdominal parietes, or below the mammæ, and may lead to a more unfavourable prognosis than the case warrants.

There is scarcely any condition of muco-enteritis from which patients do not recover, especially among infants.

The *second* form of enteritis is more severe, and all the coats of the intestine are involved. The symptoms are exceedingly acute, and too frequently advance to a fatal termination with great rapidity; or they may be extended over many weeks or months. The small intestine alone may be affected, or the cæcum and colon are also implicated.

Several instances which have come under my own observation will illustrate the disease.

CASE LXXV. Acute enteritis.—A child about 7 years of age, after eating freely of raw apples, was seized with pain in the abdomen around the umbilicus; the bowels were constipated; the abdomen was tender and distended; the countenance was expressive of much distress; the pulse was rapid; the tongue had slight white fur upon it. The constipation continued, the abdomen became more tender and distended, and the child was found lying on its back, with the legs drawn up in severe pain, and with occasional vomiting. This state continued for several days; the bowels then were freely acted upon, but the child became prostrate, and shortly died, four or five days from the commencement of the disease. On opening the abdomen, the intestines were found much distended with flatus—the peritoneal surface intensely injected where the coils were in contact—and were covered with lymph. The mucous membrane of the small intestine was found congested, and contained portions of undigested apples.

The inflammation had been set up by crude undigested food; it extended rapidly from the mucous to the muscular and connecting tissues and to the peritoneum. The inflamed intestine was unable

to propel its contents, and hence the constipation; so marked sometimes is the constipation, that it is the most prominent symptom.

Where the disease is less severe, the constipation, pain, and distress subside, and the patient is quickly convalescent; or they continue to recur, exhausting the strength and power of the patient. The severe pain in this form of enteritis contrasts with the absence of it where the mucous membrane only is affected.

The symptoms in other instances closely resemble mechanical obstruction.

CASE LXXVI. *Enteritis simulating mechanical obstruction.*—Henry V—, æt. 17, was admitted into Guy's July 24th, 1850. He was a tall, thin lad, who had been employed in a tobacco-shop, and a week before admission had had diarrhoea, which was checked by an opium pill. The day before admission he felt well, and whilst walking out of doors, he ate some apples and cherries; a few hours afterwards severe pain in the abdomen came on; some rhubarb, with compound chalk powder and opium, was prescribed; the bowels were opened twice during the night; at seven in the morning severe pain in the abdomen returned; his countenance was expressive of great distress; the eyes sunken, the bowels confined; the tongue furred and clammy; he was rolling himself from one side of the bed to the other from the intensity of the pain; the recti muscles were rigid, but pressure could be borne; an emetic was administered, and some undigested apples and cherries were vomited. Calomel gr. v, with opium gr. jss, were given, but at once returned; a turpentine injection was then administered. Vomiting then came on, at first of bilious fluid, afterwards stercoraceous; the injection brought away some scybalous matter, but without relief to the pain. The calomel and opium were repeated, but at once returned. At 5 P. M. he was placed in a warm bath; the tongue was clean, the pulse 130, the abdominal muscles rigid, and the paroxysms of pain in the abdomen very severe. Calomel and opium, of each 1 gr., were given every three hours, and to relieve the intense pain, chloroform ℞xx were prescribed. His pulse became exceedingly rapid, and he died at eleven the next morning, about thirty-six hours from the commencement of the pain.

On inspection, the intestines were found very much distended; the peritoneum injected, and delicate, portions of lymph passed between the coils; on turning aside the small intestines, the cæcum, colon, and about three feet of ileum were found collapsed, pale, and empty; at this point there was a sudden cessation of the intense congestion and distension, giving the appearance of constriction; but no constriction or twist could be detected; the mesentery, however, attached to this part, and connected with the last lumbar vertebra, contained several hard and calcareous glands, and appeared slightly contracted; on raising the intestine, and placing it in a straight line, air at once passed, and the constriction disappeared. The intestine was full of pale yellow fluid feces, and contained some undigested matter; no ulceration existed, and the other viscera were healthy.

In this case severe colic came on after taking indigestible food; inflammation of the mucous membrane of the small intestine was produced; this extended to the muscular and peritoneal coats, and was followed by intense pain, distension and vomiting; it appeared that the slight interference with the movement of the ileum opposite to the calcareous mesenteric glands, led to the limitation of the disease at that part, and that over-distension following inflammation was the principal cause of the obstruction. The abdomen for several hours was tolerant of pressure, and the symptoms of peritonitis came on later: could the enteritis have been subdued, the obstruction would probably have disappeared. This case was

under the care of one of my colleagues, at Guy's, and is recorded as a good illustration of severe enteritis.

The following case is one in which the most acute enteritis produced scarcely any symptom; the patient was semi-comatose; but it is closely allied to cases in which apparently local enteritis is set up by obstructed vessel.

CASE LXXVII. Sloughing ileum. Peritonitis, large fatty kidneys, degeneration of the left lobe of the liver. Lobular pneumonia. Small fatty heart.—Thomas C—, æt. 43, admitted into Guy's December 7th, 1853, and died December 31st. By trade he was a sailmaker, and during the last two years of his life had been very intemperate. He was admitted with anasarca, and coagulable urine; diarrhoea and wasting came on, and before death a semi-comatose condition. Inspection was made 47 hours after death. The body was spare and pallid, the right side of the body œdematous (from position); there were pleuritic adhesions at the apex of the right pleura; the lungs were very œdematous, and some lobules were softened and breaking down. There was slight atheroma on the mitral and aortic valves. *Abdomen.*—The intestines were distended, there was general peritonitis, but only slight injection of the peritoneum at the edges which were in contact; eight inches from the ilio-cæcal valve, the peritoneal surface of the intestine for several inches was of a dark gray colour, as if on the point of sloughing, but there was no constriction or strangulation, nor had there been any symptom of it during life. The mucous membrane at the lower part of the ileum was in a sloughing condition, defined, and intensely congested at the margin; this thin slough affected the whole of the mucous membrane, and was not confined to Peyer's glands; the mesenteric veins were filled with clot. The left lobe of the liver was wasted, forming a fibrous mass, and white in colour, the remaining part of the gland fatty. The kidneys were large, and white.

In this patient the disease of the kidney had led to uræmic poisoning, and the semi-comatose condition of the patient; hence the non-complaint of pain in the severe peritonitis which was found after death. There is great disposition to serous inflammation in uræmia, of the arachnoid, pleura, pericardium, and peritoneum; but it is rare to find such a state of acute inflammation as that described in this case.

Pathological appearances.—In muco-enteritis we may find very much less change than had been anticipated. No ulceration or congestion may be observed throughout the whole canal. It is probable that the injected condition had, like erythema of the skin, entirely passed away; some of the most severe forms of bronchitis present scarcely any change of the bronchial tubes themselves; the congestion has disappeared, though the altered mucus remains.

A change in the character of the secretion from the mucous membrane is a sure indication of its deviation from the normal condition; but, unfortunately, we do not possess the same facility for the examination of the secretions from the digestive as from the respiratory mucous membrane. Adhesion of a thin stratum of fecal matter is an indication of imperfect secretion of mucus; or a lymph-like exudation takes place; this resembles the diphtheritic membrane, described as being occasionally found in the throat, and consists of an immense number of granules with nuclei; it may sometimes be easily scraped off, exposing an injected surface beneath; in other instances a section of the whole membrane shows that it is firmly united.

The mucus, which is found in the intestine equally with that evacuated during life, sometimes presents indications of rapid change having taken place; nuclei and elongated cells of incomplete epithelium are found in great abundance.

Crystals of triple phosphate are not very unfrequently found on the surface of the mucous membrane after death. It is probable that in many instances this is a post-mortem change; but in others we find such crystals where the inspection has been made a few hours after death, and they probably result from decomposition of the mucus, as we find in the urinary bladder with chronic inflammatory action.

The solitary glands may be very large and prominent, due perhaps in part to the age of the patient, and the functional activity of these structures, or to the excitement of morbid action. A granular and thickened state of the intestine, as if its mucous membrane were sprinkled over with fine sand, is observed in other instances. Small aphthous ulcers sometimes exist, even perforating the intestine, as in a case recorded among the inspections at Guy's, in which there were minute ulcers extending throughout the whole of the small and large intestine; and perforations of the cæcum and transverse colon had led to fatal peritonitis.

Gray discoloration is often observed merely around the solitary follicles, or it is more general in character, either in the large intestine, in the lower parts of the ileum, or even in the duodenum. This state consists in the deposit of pigment in the membrane, and appears to be the result of continued congestion, and apparently follows muc-enteritis.

The most intense form of local enteritis is observed where a portion of the intestine has become strangulated; the mucous membrane is then swollen, intensely injected portions of fecal mucus adhere to the valvulæ conniventes, or the whole surface is covered by a thin, adherent layer of granular lymph; all the coats of the intestine are thickened, the areolar tissue is oedematous; the peritoneum covered by lymph intensely congested, and of a purple or slate colour, or even gangrenous. A condition very closely resembling this is sometimes found without any strangulation; thus the injected and swollen state of the mucous membrane, with adhesion of fecal mucus or diphtheritic membrane, either almost general or at the lower part of the ileum, we have several times observed with or without inflammation of the cæcum and colon. (*See Dysentery.*)

Sometimes a distended and congested state of the ileum terminates suddenly, as if constricted, and the portion of small or large intestine below is pale and contracted; on removing the intestine the apparent constriction ceases, the canal becomes perfectly free, and the congestion is the only thing that marks the obstruction. There has been much discussion whether there is really obstruction by a twist of the intestine, a spasmodic condition of the contracted part, or a paralyzed state of the distended one; the last is now generally re-

garded as really the case; that the inflamed intestine becomes distended, its peristaltic contraction enfeebled, so that at last it is unable to contract upon, and propel its contents. The abrupt termination may be determined by a cicatrix, by slight peritoneal adhesion, or by old disease of the mesenteric glands. These cases closely resemble true ileus strangulation or other mechanical cause.

Ulceration and sloughing, or gangrene, generally follow this form of enteritis; but, although in hernia and internal strangulation the gangrenous part is at the seat of constriction, this is not always the case in obstruction from other causes.

In Case CXXXIX. of disease of the sigmoid flexure, ulceration took place above the seat of the obstruction; but the most acute inflammation and ulceration were in the ileum, cæcum, and ascending colon. The inflamed mucous membrane appeared as if it had given way from the enormous distension; numerous ulcers, arranged in *transverse* lines, were closely set together in the *ileum* and cæcum, and some of these had extended through the peritoneum.

Obstruction of the mesenteric vessels usually takes place in cases of internal hernia; but it is probable that obstruction of these vessels is sometimes the cause, not the effect. Intense engorgement of a few inches of intestine may be seen, apparently about to slough, but without any symptom having been manifested during life, and without any obstruction being found after death; the mesenteric veins or arteries extending to the part are found obstructed, and have probably led to this result. Case LXXXVI. last recorded appeared to be of that kind.

In inflammation of the mucous membranes generally there is a great tendency to the extension of the disease by continuity of structure. Sometimes the alimentary canal, in its whole tract, appears to be inflamed; at other times, it commences in one part, and extends from that as from a centre. Inflammation of the colon will pass into the ileum; that of the ileum into the large intestine, as well as into the jejunum, duodenum, and stomach. Broussais' speaks of this extension of disease; but, though we are not disposed to agree with his opinions, we must, I think, acknowledge the truth of the frequent extension of disease to contiguous and continuous structures. It is probably as true of the mucous membrane as of the skin, as we find in erysipelas.

The *diagnosis* is very important, because means tending to aggravate the disease may be employed, valuable time lost, or such aid passed by as might have been of essential service.

Hernia, external or internal, intussusception, or mechanical obstruction from any cause, may be confounded with enteritis arising from simple inflammation.

It is well always to examine the ordinary positions of external hernia; many mistakes would have been avoided by this simple means. In internal strangulation the pain generally comes on after

¹ Broussais, Phlegmasies Chroniques.

sudden muscular movements or exertion of the strength; the patient was, up to that moment, in comfortable health, when something is felt to give way, or there is a "catch," and fixed pain is felt, from which subsequent pain radiates; not that this spot necessarily indicates the seat of obstruction, as found after death, because distension and the movement of viscera will produce much alteration. From the sudden onset of pain, constipation and vomiting with varied degrees of severity come on, till prostration, collapse, and death ensue. The rapidity of the symptoms may be as great as in external hernia. We do not observe this fixity of pain in enteritis, although it may be at first localized to a comparatively small space.

In internal obstruction without strangulation we often find previous constipation, and the commencement of the attack is slower; the pain being sometimes very slight till towards the close of the malady.

In intussusception the sudden severe pain of colic is very different from that of enteritis, and is more likely to be confounded with colic than with enteritis. Where the symptoms of obstruction from intussusception become developed, the discharge of bloody mucus is often observed, and assists the diagnosis, as shown by Mr. Gorham.¹ In enteritis it is very important carefully to ascertain the symptoms which marked the onset of the disease.

It is difficult to distinguish some cases of *chronic poisoning*, or even *acute poisoning*, from enteritis from other causes. In these, inflammation of the mucous membrane is produced. I may refer to cases of chronic poisoning by arsenic; the vomiting is often very severe, and the irritability of the stomach a very prominent symptom, but never stercoraceous; the abdomen is generally less tender than in the worst cases of enteritis; but in doubtful cases we must be guided by the concomitant symptoms and the analysis of the vomited matters. In the enteritis from crude indigestible food, and that from substances classed as poisons, as from some forms of mushrooms, from copper, &c., the symptoms may be very similar, so much so, that we may be unable to distinguish the one from the other.

In *simple colic* there is less difficulty; there is absence of tenderness, and the pain may be actually relieved by pressure.

In *peritonitis*, suddenly induced by perforated intestine, the collapse is greater; the abdomen becomes exquisitely tender and tympanitic; vomiting is not generally produced, unless the peritoneal surface of the stomach and its coats become involved. From whatever cause enteritis is induced, peritonitis is a very common symptom, the muscular coat is implicated, and the peristaltic action by a wise provision checked.

In *hysteria*, we sometimes find tympanitis with constipation, irritable stomach, pain in the abdomen, which might by carelessness be mistaken for acute inflammation. The expression of countenance is not that of severe abdominal disease; the vomiting may be in-

¹ Guy's Reports, 1838, p. 300.

duced by anything put into the stomach, but disappears at other times. The pain is cutaneous, and the abdomen is tolerant of continued pressure, unless there be inflammatory disease about the ovaries. There is generally leucorrhœa, painful or disordered menstruation; but the patient often with these symptoms remains tolerably nourished.

Ischuria renalis.—Dr. Barlow has pointed out the importance of bearing in mind disease of the kidney in its sympathetic symptoms. In suppression of the urine, vomiting and constipation are often produced; but the cerebral oppression is generally very marked, and the examination of the urine (drawn off by catheter, if none can be passed) would at once decide the character of the complaint, if there be any obscurity.

Cerebral disease.—It is not unfrequent to find vomiting a symptom of disease of the brain, and that with constipation; but there are some peculiarities in this state which distinguish it from enteritis and mechanical obstruction. There is no pain or distension about the abdomen; the tongue, the countenance, and the other symptoms of disease are different. In a case of this kind, in a man about 30, which came under my own observation, where local suppuration was found to have taken place between the membranes of the cerebellum, near the medulla oblongata, the stomach rejected food of every kind, often with considerable violence, the bowels were constipated, there was slight tenderness in the abdomen; but the disturbance of the cerebral functions of the senses showed the character of the disease. In young children it is sometimes difficult to distinguish muco-enteritis from true hydrocephalus; there is irritability of the stomach in both, perhaps diarrhœa, heat of skin, startings in the sleep, loss of appetite, unwillingness to be disturbed, &c., but in the former, the abdomen is more distended, in the latter it is collapsed; the tongue is injected, furred in one, clean in the other. In hydrocephalus also there is greater pain in the head, or drowsiness, disturbance of the pupils, contracted, or in the later stages widely dilated, with strabismus, or distension of the fontanelles; the vomiting in hydrocephalus is often induced by only raising the body from the recumbent posture. In the exhaustion which occasionally follows severe diarrhœa, or muco-enteritis in infants, a series of symptoms, resembling hydrocephalus, or as it has been called hydrencephaloid disease, supervene; these, however, are very different from true hydrocephalus; they should be borne in mind, lest the effect of exhausting disease be misinterpreted; in these we have the half-closed eye, the emaciated expression, diarrhœa, collapsed fontanelle; and the early symptoms are seen to commence in abdominal, not cerebral disease.

Causes.—The ordinary causes of enteritis are improper or indigestible food; this is especially the case in infants and children in whom the disease is set up during dentition or weaning, or after exanthems, especially measles. Exposure to cold or wet, sleeping

in damp beds, or in the open air; violent and sudden contortions of the body, excessive muscular exercise in walking, &c.

Mechanical obstruction, however produced, whether by hernia, intussusception, internal strangulation, tumours, &c.

Prognosis.—The unfavourable symptoms of enteritis are the long persistence of the disease; emaciation, the development of peritonitis, distension of the abdomen, hiccough, prostration of strength, irregular pulse, haggard and anxious expression, sunken eye; or after constipation of obstinate character, the onset of severe diarrhœa, of thin offensive or serous mucus; partial sweats, inability to take food, persistent beef-like tongue.

In muco-enteritis, the continuance of diarrhœa, thin serous evacuations like the washing of beef, the exhaustion of the patient, exceedingly rapid pulse, convulsions.

Enteritis is less amenable to treatment where there is strumous diathesis; the mesenteric glands become congested, swollen, and often infiltrated, and the patient gradually becomes exhausted, or strumous disease is developed in other parts.

A more favourable prognosis is given when the pain in the abdomen subsides, the bowels act naturally, and the evacuations are of healthy character, the tongue uninjected, the skin supple and generally perspiring, the pulse quiet, the countenance cheerful, and there has been refreshing sleep.

Treatment.—If we consider the pathological conditions of the disease, the indications of treatment become evident. We believe, then, in the existence, in these cases, of an inflamed condition of the mucous membrane, which may, or does already extend to the sub-mucous, muscular, and peritoneal coats.

It is exceedingly inadvisable to try and produce action on the bowels by violent purgative medicine, as by jalap, senna, scammony, or blue pill, croton oil, crude mercury, and the like. The peristaltic action is checked by the inflamed state of its coats, and additional irritation retards it still further. Leeches applied freely to the abdomen, according to the age of the patient, or depletion from the arm has, in many instances, been followed by free evacuation from the bowels, and relief of pain. Warm fomentation should be applied to the abdomen.

Where irritating ingesta are retained, producing and perpetuating the disease, we may administer, at an early period, a purge of calomel, or gray powder, followed by castor oil, or linseed oil with opium, or a free saline purge, as the potassio-tartrate of soda, or sulphate of magnesia.

Where, however, there is tenderness, it is more safe to give calomel, or gray powder, combined with opium, several times during the day.

Alkalies are of service in acting as sedatives to the mucous membrane, diminishing its engorged state, neutralizing irritating secreta; the bicarbonate of potash, in doses of gr. x, or gr. xv, solution of potash in doses of ℥xv, ʒss. Chlorate of potash, in gr. v to gr.

x, or carbonate of soda, gr. v to gr. xv, combined with narcotic remedies, as hyoscyamus, conium, which appear to act on the involuntary muscular coat, and on the nerve supply of the intestine, is, in other instances, apparently beneficial.

A valuable combination in less severe cases is gray powder with Dover's powder.

Some administer magnesian salines, as sulphate of magnesia, or calcined magnesia; but where there is tendency to extension of the disease to the peritoneal coat, I think sulphate of magnesia is injurious in increasing the peristaltic action of the intestines; although, in its direct effect on the inflamed membrane, it may lead to the emptying of its capillaries by watery evacuation.

Rest in bed is important, that the intestines may not be disturbed in their position; perforation, in many cases, follows ulceration of the intestine, or there is extension of peritonitis from inattention to this in less severe cases.

Abstinence from irritating food, in fact, none but the most mild and bland must be taken; demulcent drinks, milk, alone or united with lime-water, or soda-water, as the case may be.

There must be great care after the subsidence of the more active symptoms, in returning to nourishing and substantial food, as well as in the use of any active exertion.

In children with muco-enteritis, chlorate of potash is a valuable remedy; in some cases, it appears to act with as much benefit as in cases of stomatitis. Citrate or bicarbonate of potash are also of real service. In other cases, where the motions are clayey and white, alterative doses of calomel, with carbonate of soda, or chalk, as the compound soda powder of Guy's, or astringents alone; chalk, with catechu, or krameria, or logwood, with small doses of opium, $\frac{1}{10}$ to $\frac{1}{30}$ of a grain, but in infants it is better altogether to avoid the use of opium.

Maunson and Evanson mention the value of dilute nitric acid with minute dose of opium and simaruba, and I have often used it with advantage.

Ipecacuanha is a valuable remedy where there is not irritability of the stomach, and may be combined with chalk medicine.

It is essential only to administer food that can be easily digested, and although it may appear of a proper kind, if the symptoms continue, a change should be made. The disease often comes on at weaning, and the greatest care is required; "tops and bottoms," with water, and a small quantity of milk; dried flour, biscuit powder, &c., may be given, or milk-and-water alone. I have seen cases where the only food that could be borne was water boiled for a considerable time with rice, after which the vomiting and purging ceased, and a gradual return to more substantial food was attained. For some infants, it may be necessary to obtain a wet nurse, which is not desirable if it can be avoided. Asses' milk is the best substitute for the natural supply.

CHAPTER VII.

STRUMOUS DISEASE OF THE ALIMENTARY CANAL.

INFLAMMATORY disease of the alimentary canal in strumous subjects can scarcely be separated from the more slow and insidious strumous disease, associated with less active symptoms. Struma should not be looked upon as a disease of isolated organs of the body; but one in which the power of assimilation is diminished, the nutritive functions imperfectly performed, and an unhealthy and unorganizable plasma readily poured out. Disease set up by the ordinary exciting causes in subjects of this kind leads to the various forms of strumous deposit and its subsequent changes. A blow on an epiphysis leading to strumous disease of the bone; a slight bronchitis to strumous pneumonia, and the deposit of tubercular substance in the lungs; over-excitement of the brain to hydrocephalus and strumous meningitis; slight irritation of the mucous membrane of the intestine, or muco-enteritis, to deposit of unorganizable product in the mesenteric glands or in the mucous membrane. The abnormal condition antecedent to these deposits is, I believe, correctly designated tuberculosis; damp air, a want of light and proper food, imperfect rest, hereditary disposition, and, perhaps, syphilitic taint, induce the imperfect elaboration of those products necessary for healthy growth and nutrition; and in this state the blood—the nervous force, the vital activity of every part of the body—is unable to return to the normal type on the slightest derangement, but strumous inflammation and deposit take place; nay, more than this, tuberculosis is oftentimes so marked that apparently without any fresh exciting cause, the forces required for ordinary healthy nutrition are insufficient for their proper function, and an unhealthy plasma is poured out, constituting miliary tubercle.

Strumous disease of the alimentary canal is observed under various forms:—

1. As it occurs especially in infants—diarrhœa with or without strumous disease of the mesenteric glands, often induced by, and in many cases leading to, uncontrollable purging.

2. Primary disease of the mesenteric glands.

3. Tubercle in the peritoneum, and strumous peritonitis in its several forms.

4. Tubercle in the mucous membrane with enteritis, leading to

softening, ulceration, and perforation, as is frequently observed in phthisis.

5. Tubercle in the appendix cæci.

1. *Diarrhœa in strumous children*.—The symptoms are very similar to those which we have described as gastro-enterite, but here engrafted upon a strumous constitution, more easily induced, and less yielding to medicinal treatment. It causes the death of thousands of infants among the very poor of London, but does not spare the rich where there is great hereditary disposition; the diarrhœa is frequently set up by some change in the diet; by the nourishment having been of an improper character; by disordered secretions poured out from the mucous membrane of the stomach, intestines, or liver; and often follows the exhaustion of measles, scarlet fever, &c. Many of these yield to the removal of the exciting causes, and the administration of simple corrective medicines. Where, however, these causes cannot be removed; where the infant cannot be taken from offensive exhalations, damp or cold atmosphere, and have proper food administered—especially where there is a very feeble strumous constitution—too frequently does the diarrhœa continue; the little patient becomes wasted, the countenance expressive of extreme distress, and has an aged, careworn appearance; the evacuations consist of greenish thin mucus, of food only partially changed, or they resemble the washings of meat, and are exceedingly offensive. The skin is dry, sallow, and wrinkled; the abdomen full, sometimes hot and tender, and there is pain of a colicky character; the mouth is dry, and sometimes aphthous, the tongue slightly furred, the breath offensive, the eyes languid, the sleep disturbed often with starting moans. The child is exceedingly restless, fretful, and almost incessantly whining; sometimes the stomach is irritable, or the appetite is craving, and the child distressed by thirst. Such are the symptoms of severe gastro-enterite rendered intractable by strumous deposit, and passing into the conditions described as *tabes mesenterica*.

In some cases even of extreme exhaustion the little patient rallies where proper remedial means can be employed; in others the diarrhœa persists day after day, slightly abating and then returning with renewed violence, till at last the infant dies exhausted, or convulsions come on before the close of life. It rarely happens that with very severe diarrhœa, there is much cough, although the lungs may be throughout filled with miliary tubercles.

Post-mortem appearances.—After death we may find no apparent change in the whole tract of the mucous membrane; the liver, spleen, and lungs, are normal; the mesenteric glands may be enlarged and swollen, and in some containing evidence of low organized deposit. It might be questioned, whether the disordered mucous membrane did not induce this condition of the glands; but whether so produced or primary in its origin, there can be little doubt that it leads to the maintenance of an abnormal state of the

mucous canal, and indicates strumous cachexia. Where we have a more vigorous constitution, one free from struma or imperfect nutritive power, the patient often rallies, and the fatal symptoms are checked.

Treatment.—In the treatment of these cases, it is most important to remove all exciting cause of disease, and every impediment to healthy performance of nutrition and growth, to inculcate perfect cleanliness, pure air, to administer the most mild and unirritating food, and afford warmth to the body.

The child should be placed in a warm bath, clothed in flannel, and the air of the room maintained at an equable temperature. Milk will not agree with some infants, in whatever form it may be given; in others, asses' milk, or milk with lime-water or soda-water, is retained, or water boiled for a long time with rice; in others "tops and bottoms," made with water without sugar; dried flour or biscuit-powder should be tried, or, as a *dernier ressort*, a wet nurse.

In the medicinal treatment, where chalk mixture made with dill or cinnamon water, and with or without a few drops of ipecacuanha, does not avail, I have found great benefit from the administration of the compound logwood mixture of the Guy's Pharmacopœia:—

Misturæ cretæ, fluidunc. vj;
Extracti hæmatoxyli, dr. j;
Vini ipecacuanhæ, fluidr. j;
Vini opii, fluidr. ss.

In doses of one or two teaspoonfuls, *or*, the compound infusion of catechu, with a small quantity of opium, and, if need be, a few drops of aromatic spirit of ammonia. The krameria is also a valuable astringent, with or without chalk and opium, as in the Guy's preparation: Decoction of krameria ʒxv (root ʒix, with water Oj, boiled to ʒxv); Ipecacuanha wine and tincture of catechu, of each ʒvj, and syrup, ʒiss. A teaspoonful to a tablespoonful as a dose, according to the age of the child.

Where a strumous condition exists, great benefit is derived from the administration of cod-liver oil, with steel wine, or the latter alone. If there be no vomiting, cod-liver oil is sometimes exceedingly serviceable; where it cannot be taken, dilute nitric acid, with infusion of cusparia, and a few minims of compound tincture of camphor, are of benefit, especially where other means have somewhat moderated the diarrhœa.

Among the out-patients, as I have too frequently observed, at the City of London Dispensary, and still more extensively at Guy's Hospital, many instances of this form of strumous disease are presented; diarrhœa rendered uncontrollable by strumous cachexia, or by disease of the mesenteric glands; and some of the worst forms of the disease are found to occur, as the sequelæ of exanthems, especially after measles.

In some cases small doses of sulphate of copper as $\frac{1}{8}$ to $\frac{1}{4}$ of a grain, or of nitrate of silver in similar quantity, or of acetate of lead in $\frac{1}{2}$ or 1 grain doses may be prescribed with one or two grains of Dover's powder. Mercurials are, I have generally found, detrimental, except in alterative doses; continued doses of calomel certainly aggravate the disease. Small enemata of starch may be used with benefit, and where we have a good nurse, other agents may be well applied in this way; a weak solution of nitrate of silver or of borax tends to diminish the irritation of the lower bowel, and may prevent prolapse. Where exhaustion is extreme, nourishment must be administered every few minutes if the stomach can retain it; and small quantities of wine or brandy conjoined. In not a few cases the latter has been the means of prolonging life and restoring infants to health, who were apparently in the arms of death.

This form of diarrhœa, consequent on strumous disease, is, however, not confined to children. The following case is an instance of that kind, where apparently simple diarrhœa assumed an obstinate type; no form of medicine or diet checked it for many days, and at last the patient sank. There was evidence of some inflammatory action at the lower part of the ileum; intense congestion, slight diphtheritic effusion, and ulceration of the Peyer's glands, but these were so local that they were not considered sufficient in themselves to explain the severity of the abdominal symptoms. There were minute tubercles in the peritoneum, and low organized deposit in the mesenteric glands, and these were indications of the strumous character of the patient. In the lungs were no vomica or miliary tubercles; some iron-gray deposit at the apex and slight strumous deposit were observed, and at the lower lobe ordinary hepatization, which came on a short time before death.

CASE LXXVIII. *Slight strumous disease of mesenteric glands. Fatal diarrhœa. Pneumonia.*—Charles A —, æt. 30, a waiter, was admitted into Guy's August 15th, 1855.

Three years before he had severe diarrhœa, and five weeks before admission, had pain at the stomach, loss of appetite, and cramp, &c. He lost flesh considerably. His stomach was sometimes irritable, and he had vomiting. On admission there was febrile excitement; the diarrhœa and irritability of stomach continued, and were accompanied with loss of flesh. The cause of the diarrhœa was not evident. The respiration was coarse at the apices of the lungs, but he had no cough. The abdomen was collapsed, and without pain; no tumour, or abnormal condition, could be detected on careful manipulation; his tongue was moist, and not injected, and there was no hoarseness. His urine was non-albuminous; sp. gr. 1014. The diarrhœa and disturbance of the stomach continued; chalk, kino, opium, copper, oxide of silver were prescribed; the last appeared most effective; although the diarrhœa ceased for a short time, still he did not appear to derive nourishment from food; an attack of diarrhœa came on a few days before his death, and he died October 21, 1855. Inspection twenty-six hours after death: The body was extremely emaciated, eyes sunken. In the chest there was slight pleuritic adhesions at the right apex; the lungs collapsed generally; at the extreme apices old iron-gray deposit, with some low organized deposit; but no vomica or miliary tubercles. At the lower lobe of one lung there was red hepatization, affecting a large proportion of the lobe. The bronchi were slightly granular, and contained frothy mucus: the larynx healthy. There was considerable injection of the mucous membrane at the root of the tongue. The bron-

chial glands normal. The heart was small, without fat, and healthy. *Abdomen*—exceedingly collapsed. The transverse colon was curiously twisted, so as to make a sigmoid curve in the epigastric region; it was the only portion at all filled with gas; the rest of the intestines were much collapsed. *Stomach*—pale, its mucous membrane normal. In the *duodenum*, the glands very distinct; in the jejunum the mucous membrane gray; in the *ileum*, the mucous membrane was intensely congested; one of Peyer's patches, about two feet from the cæcum, was ulcerated; the membrane in several parts had a thin, adherent, brownish covering, as of epithelium stained by adherent feces. On examination, this was found to consist of columnar epithelium. The cæcum was intensely congested, and its membrane ecchymosed. Its examination showed on the surface epithelium, blood, some mucus, and the capillaries full of blood. The ascending and the whole colon was in a similar but rather less intensely congested state; no ulcer could be found. The appendix cæci was full of feces. The mesenteric glands varied exceedingly in size, from a pea to that of a pigeon's egg; some swollen, red, and cedematous; others containing yellow strumous product; and in some parts beneath the peritoneum of the mesentery were minute tubercles; there was no evidence of pressure on thoracic duct; the pancreas appeared small, but healthy. Kidneys and supra-renal capsules were normal; spleen healthy; liver normal in size, and healthy; gall-bladder much distended. On examining the semilunar ganglia, the cells were seen to contain much pigmental matter, but no disease could be found.

It was believed that this was a case of phthisis, in which there was extensive ulceration of the colon; such was, however, not the case. The abdomen was collapsed, and it is not known that blood was passed; these signs would have indicated ulceration or dysentery. The disease of the mesenteric glands appears to have been the original one; and this was the explanation of the gradual emaciation. The diarrhœa was the result of subacute disease, but there was no evidence that it was of an inflammatory character. Great congestion, perhaps partly mechanical, had led to change in the condition and nutrition of the mucous membrane, and serous diarrhœa. Acute pneumonia was the immediate cause of death, but only came on a few days before that event. The oxide of silver, gr. ss, with extract of conium, gr. iij, appeared to be the most efficient remedy administered.

2. In *disease of the mesenteric glands*, a low organized product is effused into the glands themselves, probably between the chyloferous ducts, which become entirely obliterated, and the structure of the gland destroyed. Their extensive disease prevents the absorption of chyle into the system. The glands show the disease in various stages and gradations; in some but scanty abnormal product is poured out, in others the whole gland is destroyed and very much enlarged, constituting a whitish mass the size of a pigeon's or of a hen's egg. The effused product consists of granular blastema and imperfectly developed cells. The swollen and injected state of glands less affected appears to indicate that inflammation or hyperæmia is associated with the disease. The increase takes place by additions at the periphery of that already deposited, and degeneration soon follows in the centre from the scanty supply of nourishment afforded to the central part. The gland sometimes appears to be enveloped by a firm fibrous cyst, which consists of inflammatory product better organized, having assumed the character of fibrous

tissue; whilst the centre consists of calcareous deposit, the albuminous portion having been absorbed, and the inorganic only left. Degeneration of another character, however, takes place in the effused product; it is converted into a mass of granular molecules and highly refracting particles, constituting small cheesy tubercles of a yellow colour, or a softened and semi-diffuent mass. Different stages of disease and degeneration are presented by almost contiguous glands. Sometimes the changes are of an active character, or it appears probable in others, that calcareous deposit has remained passive for many years. The lacteals between the glands become enlarged and distended with similar strumous product, or we can trace the distended ducts to the intestine, where they ramify on its surface, and at this part we generally find a cluster of tubercles and ulceration of the mucous membrane; were it not that the glands appear to be in a state of more advanced disease than the intestine, we should suppose that the strumous ulceration of the mucous membrane was followed by the absorption of like product and glandular disease; the *absorption* of nutriment is thus more or less completely prevented. The peritoneum is sometimes studded with miliary tubercles, or we merely find minute clusters in the peritoneum opposite points of ulcerated intestine. Inflammatory disease is also found in the serous membrane in various degrees, either constituting bands of adhesion, or uniting the intestine in one mass. (*See Disease of the Peritoneum.*)

Symptoms.—Diarrhœa, as has been previously mentioned, is sometimes one of the symptoms of mesenteric disease. There is gradual wasting from the obstruction of the chyle vessels, and the supply naturally poured into the thoracic duct. The patient has an anxious expression of countenance; there is dryness of the skin, injection of the tongue, which is more or less furred, and a craving appetite; the desire for food is insatiable. The bowels are irregular, purged, or constipated, and there are occasional attacks of severe pain.

Where peritonitis, or ulceration of the intestines, has been produced, pain is a more common symptom.

The abdomen is full and rounded, but it rarely happens that the enlarged glands can be felt on tactile examination; we more easily discover them in the neck and in the axillæ.

The marasmus gradually becomes extreme, and whilst the limbs are wasted, the abdomen is considerably enlarged, and protuberant.

A fatal termination may result from diarrhœa; or other organs become implicated, as the brain or the lungs; causing death by tubercular bronchitis, convulsion, or hydrencephaloid disease. In other instances disease in the epiphyses of the bones takes place, but the patient in these cases presents less advanced disease of the glands of the mesentery.

Death does not always follow this condition of the chylopoietic

glands unless the disease be very extensive; we have evidence of this fact in their calcareous condition found where death has arisen from other causes, as phthisis, or tubercular arachnitis; but the interference to the elaboration of chyle increases the tendency to the deposition of strumous product.

The period when this less severe disease was existing, and the subsidence of which had left the calcareous state just mentioned, had probably been accompanied by gastro-enterite, or, without any febrile excitement, the child had been observed to be imperfectly nourished, its growth retarded, and its nutritive power evidently feeble. It is in this early stage of the disease that proper attention to the health of the child may correct commencing degenerative changes, which will, if fully developed, necessarily prove fatal. Too frequently, however, the physician is consulted when the opportunity of checking morbid action has passed by.

The following case of *strumous peritonitis* was under my care, and stated to be one of *tabes mesenterica*.

CASE LXXIX. The child, Sarah G——, was nine years of age, of a very strumous appearance, with bright eye and delicate complexion; for about a month the abdomen had become gradually enlarged, the child wasted, the bowels were variable, sometimes loose, at other times constipated, but without any severe pain or febrile excitement. Nothing could be felt on tactile examination, nor could fluctuation be perceived; an unfavourable prognosis had been previously given. Although, however, we had evidence of strumous diathesis, and the existence of deposit in the peritoneum and in the mesenteric glands was rendered probable, there was no evidence of extensive mesenteric disease. With attention to the diet, which was given of a nourishing character, and by cod-liver oil, with steel wine in drachm doses several times a day, the child rapidly improved.

It would be incorrect to consider this either as strumous peritonitis or mesenteric disease cured, but evidently it presented the early stage of the disease, probably the latter, in which we may expect to be of service to our patient.

It would be very easy to adduce many instances of this kind.

Diagnosis.—In its earliest condition it may easily be mistaken for simple diarrhoea, or gastro-enterite; and, what is of greater importance, the sympathetic affection of the brain sometimes renders it exceedingly difficult to distinguish between strumous disease of the abdomen and hydrocephalus. In the former there may be cerebral oppression, grinding of the teeth in sleep, starting, occasional vomiting, and convulsion; but in hydrocephalus the mind is generally less active—there is strabismus, or evident abnormal condition of the pupils; the abdomen is collapsed rather than distended; there is greater unwillingness to exposure of the skin to cold air, the bedclothes are drawn firmly down when the patient is sensible; and again, the extreme capillary circulation is more checked, and the vessels yield easily to distension, so that frequently on drawing the finger across the skin, a deep line of congestion remains for a short time; this indication, however, is a very imperfect one.

In the cachexia produced by enlarged spleen, by miasmatic disease, by lardaceous liver, or other glands; by the disordered viscera associated with worms; symptoms arise simulating in some respects mesenteric disease. Lardaceous disease, though closely allied to struma, exists without deposit in the mesenteric glands, and is equally unyielding to treatment. The history of the case, enlargement of the liver or spleen, assists our diagnosis.

In worms there is pallor, irregular bowels, wasting, distended abdomen, and voracious appetite, but there is more irritation about the nose and anus, less emaciation and greater amenability to treatment.

Strumous peritonitis is frequently associated with mesenteric disease, and is with great difficulty distinguished from it. The abdomen is less supple, it moves *en masse* where the disease is advanced, there is greater tenderness and distension, the pain is more severe, and emaciation less extreme. Ulceration of the small or large intestine and diarrhœa may be present in either disease; very many of the cases usually designated *tabes mesenterica*, are really strumous peritonitis.

In strumous subjects, however, after gastro-enterite, or slight peritonitis, the intestines sometimes become much distended with flatus, and at first sight resemble ascites; a very unfavourable prognosis may be given, whilst with rest, good air, cod-liver oil and steel, and occasional alteratives, the health becomes established, and the distension and pain disappear. The insidious character of strumous peritonitis must be well remembered; pain may be *entirely* absent, and the emaciation steadily progressive.

The *prognosis* in well-marked cases of mesenteric disease must be exceedingly unfavourable. Where there is general affection of these glands, the obstruction to the introduction of food into the system is scarcely less complete than in direct pressure on the thoracic duct. Numerous inspections after death, however, show us that there may be degeneration of many of these glands, which become calcareous and evidently in a passive state, whilst other glands have been restored to their normal state, and life prolonged for many years, till strumous disease in some other form, or another malady, has proved fatal.

The age most liable to mesenteric disease is infancy, the period from the first to the completion of the second nutrition; in those who attain to early manhood it is much more frequently found associated with strumous peritonitis and with phthisis.

The *causes* of this disease have been previously mentioned; they are, hereditary predisposition, improper food, and insufficient rest, the want of cleanliness and light, the exanthems, as measles, scarlet fever, and smallpox, exposure to cold, and to a damp, humid atmosphere, and probably congenital syphilis. Children brought up by hand are more liable to the disease; each of these causes diminishes

the nutritive energy of the system, and a slight exciting cause then becomes sufficient to set up the disease, or to accelerate it so that it becomes manifest in a marked degree.

Mesenteric disease is, however, rare, even in strumous subjects; in many cases of strumous peritonitis, and of phthisis with ulcerated intestine, the glands are unaffected.

Treatment.—It must always be remembered, that in this disease waste advances and increases, whilst the supply of reparative material to the blood is cut off.

Our chief aim must be to facilitate and assist nutrition; whatever is given must be easy of absorption and assimilation, as we have stated in speaking of the diarrhœa of strumous children. Wine may be often taken in proper quantities with advantage. It has been supposed that alcoholic liquors prevent waste going on with so great rapidity, and like some other substances, appear to be readily absorbed by the venous capillaries without the more gradual entrance into the blood by the lacteals of the villi. The elaboration of the chyle cannot be effected, however, by venous absorption, and the blood is imperfectly restored.

If there be febrile excitement, salines, as the bicarbonate of potash, or the citrate of ammonia, in doses of a few grains, may be administered.

In restlessness, gr. j or ij of Dover's powder, or ℥ iij or v of the solution of hydrochlorate of morphia, are of service.

Except as alteratives the use of mercurials is better avoided; but when the motions are clayey and pale, and the bowels constipated, its use, as the hydrargyrum cum cretâ, or calomel with carbonate of soda, is beneficial.

A change to sea air is very desirable in the early stages.

With cod-liver oil we may with advantage combine iodide of potassium, iodide of iron, solution of potash, &c. The preparations of iron, however, cannot in many cases be taken, pain in the bowels is produced; this is less likely to follow the use of the vinum ferri, or the saccharine carbonate of iron, than the stronger compounds.

Iodide of potassium with solution of potash and very minute doses of opium if necessary, and the medicine continued for a lengthened period, are sometimes of considerable service.

As to external remedies, the tincture of iodine may be painted over the abdomen, or strips of the ammoniacum plaster with mercury applied.

3. *Tubercles in the peritoneum and strumous peritonitis.*—The state of the peritoneum is so closely associated with that of the alimentary canal, that a consideration of strumous disease affecting that part renders some notice of the diseased peritoneum necessary.

It is manifested in several conditions.

1. Miliary tubercles covering the general surface of the peritoneum, visceral, parietal, and mesenteric.

2. Strumous deposit on the peritoneum and in the glands, associated with inflammation leading to matting together of the intestines, sometimes to perforation from without, to formation of small fecal abscesses.

3. Peritoneal ascites with miliary tubercles.

4. With tympanitis.

1. The presence of miliary tubercles on the peritoneum is found in many cases of phthisis, where there is ulceration of the intestine, the opposed surface of the peritoneum being covered with minute tubercles, apparently from the local congestion.

In children who have died from hydrocephalus, with miliary tubercles in the pia mater, or with acute pneumonia with miliary tubercles studding the whole of the lung, the peritoneum is frequently found affected in the manner described, but in other instances the affection of the peritoneum is the most prominent symptom.

The deposit is generally in semi-transparent grains, and appears to be situated in the substance of the peritoneum; it consists of an almost amorphous blastema with minute granules, and very imperfect cell development, but sometimes around the deposit elongated fibre cells and branching cells are observed.

In some cases of peritonitis, thin layers of lymph are deposited on the peritoneum, and the deposit assumes a minute granular appearance, almost as if sprinkled with sand; these must not be mistaken for true miliary tubercles; they can occasionally be scraped off, and leave the serous membrane smooth beneath, but this cannot always be effected. The movement of one part of the intestine on another, and the gradual deposition, appear to produce this condition. A more severe form of disease is that in which, with strumous deposit, there is ordinary inflammatory change; the intestines become matted together by lymph, and by low organized product, which rapidly undergoes degeneration, constituting cheesy masses. These are deposited between the coils of intestine, in the omentum, and in the adhesions themselves; so that we find the peritoneal tunics of the liver, spleen, &c., considerably thickened, three to five lines or more, and in the fibrous tissue constituting the firmer part of the deposit are tubercles or strumous infiltration. The stomach rarely, if ever, presents strumous degeneration on its mucous surface, but it is not uncommon to find tubercles on its peritoneal surface. The mesentery and its glands are also generally found in a similar condition.

The product thus effused leads to union of the intestine, one part with another, so that the peritoneal cavity becomes entirely obliterated; fresh deposition takes place as the disease advances, and the tendency to degenerate increases. The masses soften down, the peritoneal and muscular coats ulcerate, and this continues till the mucous surface gives way, and an opening is formed into the intestinal canal. The perforation takes place from without, beginning at the peritoneal surface. This perforation does not, however,

lead to more extensive peritonitis; the firm adhesions which have already taken place prevent effusions, and no extravasation follows; or a very small fecal abscess is the result. The extension of ulceration amongst contiguous coils of intestine sometimes leads to several portions becoming completely truncated and opening into a fecal abscess, in which six or eight communications may exist. I have examined several in which there were twelve to fifteen communications between portions of the intestine in different parts, but without fecal abscess. Should the adhesions be less, extensive perforation will produce more marked symptoms, if a fatal result does not very quickly follow. It is generally the small intestine which is found perforated; but in others the small intestine opens into the colon; in one I observed the jejunum communicated with the transverse colon.

It is more rare in strumous than in cancerous disease of the abdomen and intestines, to find fecal abscess followed by perforation of the abdominal parietes. In struma the disease is often very general, and several fecal abscesses exist; but the adhesions and secondary perforations allow the contents of the canal to be transmitted; in cancer the ulceration is more localized in character, and gradually extends through all the contiguous structures. In Case LXXX. in a child aged six, strumous disease of the abdomen was followed by perforation of the parietes.

The effusion in some instances is of an ascitic character, and dropsy is the result. The peritoneum is thickened, there is clear serum effused, and more or less strumous product. This is not rare among children, and is of a slow insidious character, and very intractable. It sometimes exists with a lardaceous condition of the liver or of the spleen; but this is not always the case, nor is it always preceded by exanthems.

In some instances of strumous peritonitis the intestine appears to lose its contractile power, and yields to distension, so that most distressing tympanitis takes place, or there is simple distension without pain, the muscular fibre having lost its power to contract.

The coats of the intestine become so much softened that after death they readily separate the one from the other, and may be torn in long shreds. Dr. Hodgkin placed in the museum at Guy's several specimens showing this condition in a remarkable degree.¹

The *symptoms* of this form are also sometimes obscured at the commencement; with well-marked strumous diathesis we have pain in the abdomen of a severe character resembling colic; and it is accompanied with considerable tenderness; diarrhoea and febrile excitement come on, with injected, slightly furred tongue, and distress of the countenance. There is a circumscribed flush on one cheek. Under suitable treatment and precaution the active symptoms subside, and the patient feels relieved; in a few days or weeks,

¹ Hodgkin on Mucous and Serous Membranes.

however, the pain returns, and there is fresh aggravation of pain and of the febrile state; it may be that a defined mass is felt in the abdomen, in the umbilical, hypogastric or iliac regions; the tumour is tender on pressure, and imperfectly resonant on percussion.

These attacks are repeated from time to time, and the diarrhoea becomes severe, and occasionally there is vomiting. The body wastes, but the abdomen is large, and in most cases loses its suppleness. It moves *en masse*. The tongue becomes more injected, oftentimes red and morbidly clean. The strength of the patient is broken, severe hectic is set up, attacks of pain are more frequent, portions of the abdomen become exquisitely tender, and gradual exhaustion supervenes, or more general strumous disease is set up. The brain becomes affected by the deposition of strumous deposit there, and slight coma or convulsions come on before death. The symptoms somewhat resemble those of mesenteric disease; the abdomen is hot and often distended and tympanitic; the recti are rigid. The patient becomes wasted, the countenance anxious, the eyes sunken; if a child, it is fretful; the bowels often act with regularity; the pain is sometimes a marked symptom, but is often absent, or merely resembles occasional colic. The wasting of the body is less than in severe disease of the mesenteric glands.

Where there is considerable effusion into the peritoneal cavity, the symptoms may be exceedingly insidious, merely enlargement of the abdomen, without manifest febrile symptoms, pain, or tenderness; fluctuation is readily perceived; and generally without enlargement of the liver or spleen, and without thoracic disease or albuminuria. The patient becomes anæmiated and emaciated, pain is occasionally paroxysmal, or in less severity, but continued. Strumous disease of other organs generally follows, and leads to fatal results.

There is great difficulty in producing absorption of this fluid; the peritoneum is in a passive condition, and medicines which act on the excretory organs, alteratives, solution of potash, iodide of potassium, often fail in the desired effect.

The third form is that in which there is less serous effusion, but the strumous product is accompanied by greater inflammation, lymph is effused, and the intestines matted together by bands of adhesion, or there is cough from strumous disease of the lungs; but this terrible aggravation to the suffering of the patient is generally spared them; the pneumonic disease remains latent.

The severe attacks of pain often indicate the formation of fecal abscess or fresh accessions of inflammation.

In cæcal disease and in phthisis we have dwelt on the sudden peritonitis, which is sometimes set up in subjects affected with those diseases.

Causes.—Children in their first dentition, and at the age of puberty, are very prone to this disease, in whom the rapid developmental changes are perverted and altogether degenerated by struma;

but at early manhood, from 15 to 25, or 30, we observe many instances of it.

The predisposing causes are those of strumous disease generally, whether of an hereditary character or from the unwholesome character of food, the want of cleanliness, a damp humid state of atmosphere, with exposure to cold; insufficient light, &c.; light is as essential to healthy growth as cleanliness; but unfortunately the absence of the one often entails the other. The dark offensive dwellings of poverty are terrible manifestations of the sources of struma; but with the rich, hereditary tendency, exposure to cold, &c., are sufficient, with very slight exciting causes, to induce affections of this form.

It is sometimes excited by blows or falls on the abdomen, by diarrhoea from injudicious food or excess.

It is oftentimes found as a sequence of typhoid fever; the follicular ulceration of the intestine and irritation of the mesenteric glands being followed by strumous disease.

The *diagnosis* has already been spoken of in mesenteric affections.

The *prognosis* in the well-marked cases is very unfavourable, but at an early stage much may be done to render the changes which have occurred passive, and to prevent the accession of fresh disease.

Treatment.—The indications of treatment are very similar to those mentioned in mesenteric disease. As far as possible the exciting cause of the disease should be taken away, and, what is less practicable, we must attempt the removal of the condition which constitutes the disease, namely, strumous degeneration; this may in part be effected by sea air, by iodine, cod-liver oil, iodide of potassium, and sometimes the milder preparations of steel. Nourishment should be freely given, and of a character that can be easily assimilated. Improper food may induce most severe colic, and defeat all remedial measures.

The inflammatory state is best counteracted by the application of leeches and counter-irritants; as by cantharides, or iodine, applied externally; in children, it is well to place a portion of tissue paper between the cantharides plaster and the skin, and only to apply it for two or three hours; or to use for a short time the acetum cantharidis; or, still better, an elegant preparation, Cantharidine Blistering Tissue.

Where fluid exists diuretics may be tried, but are not of much service. Great care is required in allowing exercise, because at the same time that fresh air and change are exceedingly desirable to improve the health, rest is most important for the abdominal organs themselves. Slight movements may break down adhesions, and lead to rapid extension of disease, and fatal termination. The importance of rest to the viscera of the abdomen can scarcely be urged with sufficient force.

Again, it is most desirable that mercurial and drastic purges

should be avoided; the gentlest laxatives and mild enemata are all that is required.

Various symptoms arise that demand almost daily attention, as diarrhoea, occasionally vomiting, each of which must be checked by appropriate treatment. In a case of strumous peritonitis recorded by Dr. Hughes in the Guy's Reports of 1856, creasote was prescribed to check severe vomiting; it produced urine almost of the colour of indigo. Pain must be moderated by opium in small doses, or of morphia; by warm fomentations or cataplasms externally; or by chloroform, or belladonna applied also to the parietes.

Gentle pressure and irritation of the ammoniacum with mercury plaster, or of a bandage, is sometimes of service; and in those cases in which fluid is poured out, tapping is sometimes advisable. A state of chronic peritonitis has been set up, and the serous membrane has become a thickened and almost passive sac.

CASE LXXX. *Strumous peritonitis. Cæcal abscess. Artificial anus.*—A little girl, æt. 6, had been suffering from chronic peritonitis for about a year. The abdomen became much distended, there was severe vomiting, and great emaciation. Six months before death, a circumscribed tumour formed near the umbilicus; this afterwards broke and discharged feces.

On inspection, the lungs were found studded with tubercles; the intestines were adherent, and several portions were perforated, and had formed a fecal abscess near the umbilicus, which had discharged externally. The Fallopian tubes were filled with soft strumous product. (Prep. in Guy's Museum, 2446⁵⁰.)

4. *Disease of intestine in phthisis pulmonalis.*—The mucous membrane of the intestine is frequently the seat of tubercle, rarely if ever primarily, but associated with strumous disease of the lung, or of the serous membranes, the brain, or bones.

A very common position for this deposit to occur, is in the substance of the mucous membrane, at the lower part of the ileum, and generally in the aggregate or solitary glands. The deposition often takes place, as in the lungs, without any appearance of inflammatory disease, and is found as minute grains, one-sixteenth to one-eighth of an inch in diameter, and of an opaque cheesy appearance. On the examination of these tubercles, they will be found to consist of an immense number of granules of fat, with imperfect nuclei; in others it will be found that the centre is semi-fluid, softening down; still more advanced we find that the slight covering of the mucous membrane has given way, and a small ulcer is formed, with a depression in its centre, and an irregular slightly excavated margin. This deposition is probably in most cases preceded by hyperæmia of the mucous membrane, or by inflammatory action; and although it appears nearly established that inflammatory action is not essential to its deposition, it tends rapidly to accelerate the ulcerative action, and the repeated deposition of strumous product at the margin of the ulcer. Where active inflammatory action has taken place, the edge of the ulcer is found to be injected and irregular, and to have extended rapidly; in some cases, also,

sloughing has taken place. The extent of this diseased state varies exceedingly, very generally only the lower part of the ileum, next in frequency the ileum and the cæcum.

With these, the colon sometimes is affected in its whole length; and lastly, also, the higher portions of the small intestines, the jejunum, even to the duodenum.

We frequently find that, at the base of the ulcer, immediately beneath the peritoneum, are numerous minute tubercles, apparently caused by the congestion of the ulcer tending to this increased deposition of tubercle. In other instances we find the mucous membrane raised, presenting a small swelling, about a quarter of an inch in elevation, and a quarter to half an inch in diameter; and in making a section of this a small collection of pus is found in it; a sort of small abscess in the mucous membrane. (*See Case of Diseased Cæcum.*)

But strumous ulceration of the intestine, where associated with phthisis, sometimes manifests itself differently. There is scarcely any diarrhœa, but sudden collapse, and often fatal peritonitis. A minute ulcer has increased in depth, so as to extend through the muscular coat, and then the peritoneum. It may be that this peritonitis is localized, or that a fecal abscess is formed, and of these we shall have to speak more fully. The affections of the appendix cæci will also require a fuller notice.

The extent and severity of the affection of the intestine are very varied. In cases where the phthisis is of that character which Dr. Addison has called pneumonic, where there is extensive effusion into the lung tissue, rapid disorganization, considerable fever, and speedy termination, the intestines are sometimes unaffected. It is in more chronic cases that we generally find this condition most marked.

In one hundred cases of phthisis only thirteen had the intestines healthy, and those of the character just mentioned, pneumonic phthisis. In sixty-nine cases the ileum was diseased, and generally the colon also, more or less; in seventeen cases the colon only was diseased. The ileum is the most frequent part affected. In more severe cases, the colon is also diseased, sometimes in its whole length, or merely the sigmoid flexure; or we find the jejunum, ileum, and colon, all ulcerated and inflamed.

Generally, attacks of diarrhœa alternate with constipation; thin bilious evacuations occasionally mixed with blood. The discharge of the bowels is sometimes composed of mucus passed in long strings or casts, or it presents the character of yeast; in a case of this kind now under my care, the evacuation closely resembles that discharged from the stomach in obstructed pylorus, but with a fecal instead of a sour odour. Under microscopical examination, minute cells and grains in state of change are observed, but not the ordinary torula, or the sarcina ventriculi. In other instances the disease resembles acute dysentery, blood and mucus are passed, with considerable tenesmus; there is slight griping pain, but the dis-

charge from the bowels resists all treatment; it may be checked for a few days, but again returns, and it is remarkable in some cases how completely the thoracic symptoms are in abeyance; no cough, dyspnœa, pain, or distress about the chest, although after death considerable vomicæ are detected in the lung. In some of these instances the appearances of the colon are quite those of a dysenteric character, the extent of the ulceration destroying in some cases the mucous and muscular coats, leaving but small islets of injected mucous membrane; in other instances the surface is covered by diphtheritic membrane, and presents isolated patches of superficial ulceration beneath. Very many of these have been observed in the numerous cases of phthisis which die at Guy's, and it is probable that the more damp air of the Borough, the ill-ventilated homes in Bermondsey and Rotherhithe, from which some of these patients have come, has induced this dysenteric state.

In other instances the diseased intestine is found in a healing condition, while the affection of the lungs has steadily progressed, or become rapidly aggravated, and led to fatal result. I have several times seen cicatrices in the intestine in phthisis, where there was no evidence to show previous disease of a different kind, as typhoid fever. In one instance, admitted into Guy's, several years ago, there were symptoms of intestinal, and it was feared insuperable obstruction; but the patient was spared to linger on for many weeks, and died from phthisis pulmonalis. A cicatrix was found in the ileum, leading to very considerable contraction of the intestine, and no doubt the cause of the previous symptoms.

In some, where the jejunum and ileum have been ulcerated throughout, with less affection of the colon, the diarrhœa has been exceedingly severe. Where the mesenteric glands are also affected, we have several times observed, extending from an ulcer in the jejunum, or ileum, distended lacteals, reaching to the infiltrated glands, and filled with strumous product. Some regard the ulceration of the intestine as having set up the disease in the lacteals and glands; others, that the gland was primarily diseased, and that the obstructed lacteals and local congestion consequent upon it, set up the ulceration at that part of the intestine. Simple distension of the lacteals is more common in cancerous disease from pressure on the thoracic duct; in struma, abnormal product fills and enlarges the lacteals.

It would appear that exposure to cold and wet is sometimes the cause of the unusual severity in the affection of the alimentary canal in phthisis. In other cases, the administration of mercury, of drastic purgatives, of improper food, induces this condition.

The presence of fistula in ano, as a complication of phthisis, is frequent, and it is a question upon which opinions are varied, whether the division of the sphincter is advisable. Most surgeons at the latter stages would dissuade from the operation; but in the

earlier condition, before there is any disorganization, the removal of a depressing and exhausting discharge may tend to re-establish health, or at least considerably to prolong life.

With albuminuria in strumous subjects disease of the colon leads sometimes to severe diarrhœa and great exhaustion. The association of phthisis with renal disease is not of very frequent occurrence; it may be the ileum and colon, as in ordinary phthisis, which are ulcerated, or it is the rectum which is especially diseased. The use of purgatives to relieve anasarca is followed by serous diarrhœa, which is very intractable; inflammation and ulceration are set up, and, like ulceration on the extremities in dropsy, may be the cause of death.

Treatment.—In most cases the avoidance of indigestible food, uncooked fruit, of malt liquors, &c., is sufficient to check the purging; or an injection of starch and opium is used with benefit. Suet and milk is an unirritating form of nourishment, so also is arrowroot; where the powers are much depressed, port wine or brandy must be prescribed.

Opium alone, or in various combinations, is of great value. Dover's powder, the compound kino powder, with acetate of lead, bismuth, or oxide of silver. Bismuth alone will oftentimes quiet this irritated condition of the alimentary canal, or sulphate of copper with opium.

Cod-liver oil, though in some cases acting on the bowels, in other instances is found to moderate diarrhœa; the bowels act with less violence and discomfort.

Other demulcents are used with advantage; the 1st object being as much as possible to remove exciting causes; 2d, to check irritating secretions, by correctives and astringents; 3d, to soothe the inflamed membrane by demulcents and by opiates.

I have found the injection of borax with barley water, or of powdered charcoal with the same agent, of more service in some cases when the colon is much affected, than simple starch with opium.¹

If there be severe pain, the application of hot cataplasms or of mustard affords partial relief.

It is the exception to find phthisis free from abdominal complication, but the following instances present some peculiarities in reference to this affection: in Case LXXXI. the mesenteric glands were very extensively diseased, and the lacteals distended with strumous product; the diarrhœa was exceedingly obstinate, and hastened the fatal termination. In Case LXXXII. the pulmonary symptoms were entirely masked, but there is no doubt that the dysenteric inflammation was more intractable in character on account of the disorganization of the lungs. If there had been no inspection after death, the latter would probably have been con-

¹ See Dr. Th. Thompson on Consumption.

sidered by many practitioners, who did not take the trouble carefully to examine the chest, as simple disease of the intestine. Each case of phthisis must be considered in itself; the varying degrees of pneumonic inflammation, of the laryngeal disease, glandular or abdominal complication, &c., render the secondary symptoms exceedingly modified and varied, whilst the broad general characters bear very close similarity; much relief may be afforded by suiting the treatment to these varying sources of discomfort and danger.

CASE LXXXI. *Strumous disease of mesenteric glands. Obstruction of lacteals. Ulceration of small and large intestine. Dysentery. Phthisis.*—William S—, æt. 20, admitted into Guy's August 29th, and died November 1st, 1855. He had been a labouring man at Hoxton, and, with the exception of a slight cough, had enjoyed good health till the January previous; he then had severe cold, and his cough increased in severity; he was confined to his room for two months, and expectorated viscid mucus; he had been gradually getting more feeble and emaciated till his admission.

His chest was narrow and contracted; there was dulness on percussion below the clavicles, and in the supra and infra-scapular regions, also roughness in the respiratory murmur, with bronchial respiration, more distinct on the right side than on the left, and increased resonance of voice. The pulse weak and frequent; the tongue had white fur; the bowels relaxed, and the appetite good.

Catechu, with extra. of poppies were given, and cod-liver oil, and morphia at night.

The diarrhoea continued with short intermission, and his affection of the throat increased; he became extremely emaciated, and died November 1st.

Inspection twenty-one hours after death.—The body was extremely emaciated, and on the lower extremities presented several spots of purpura. The larynx was extensively ulcerated; the inner surface of the epiglottis was covered by follicular ulcers united together. There were no pleuritic adhesions; the lungs collapsed well; at the apices were several vomicae, and throughout both lungs were numerous tubercular deposits and miliary tubercles. The bronchial glands were much enlarged, and infiltrated by strumous product.

Abdomen.—Intestines tolerably distended; the peritoneum presented granular tubercular deposit, and considerable injection at parts of small intestine opposite to ulcerated portions of the mucous membrane; the mesenteric glands were very large and prominent, of a yellowish white colour, and infiltrated with low organized product; some of these were the size of a pigeon's egg, and occupied the whole of the mesentery; in several parts of the small intestine, lacteals were observed to extend from the enlarged glands to the walls of the intestine; they were white, irregularly distended, in some places having a moniliform appearance; they extended in several places upon the walls of the intestine, and beneath the mucous membrane, to ulcers situated there. On opening the small intestine, numerous ulcers were observed; they commenced in the upper portion of the jejunum, and extended with greater or less intervals to the caecum; some were one and a half inch in length, their margins congested, irregular, and undermined, their surface granular, as if presenting minute strumous deposits; the ulcers were scattered about six inches apart, and were larger at the jejunum than in the ileum; strumous tubercles were observed in many parts of the ileum in the substance of the mucous membrane, and there were several minute ulcers about the size of peas. The ilco-caecal valve was much congested, swollen, and oedematous. The whole of the caecum and colon had a remarkable appearance, with the exception of a few islets of raised congested membrane; the whole surface, as far as the sigmoid flexure, was destroyed, the surface of a whitish granular appearance, presenting some congested points, or irregular pits; the secretion showed that there was low organized product in this superficial layer; some true tubercles, and cellular tissue dipping down into muscular coat; on the surface itself, was granular and imperfect cellular deposit, like the diphtheritic membrane. The descending colon presented transverse irregular ulcers, with larger intervening spaces; the rectum was still less affected; the appendix was much distended at its superior two-thirds, and ulcerated, containing strumous tubercles. The white substance in the lacteals consisted of particles of fat irregularly aggregated

into numerous spherical masses; in the mesenteric glands was ordinary strumous imperfect cellular growth. The liver normal, not fatty; spleen, &c., healthy.

CASE LXXXII. *Ulcerated colon. Phthisis. No cough.*—Mich. M'Carty, æt. 53, admitted with violent purging, which had existed a week; much mucus was passed per rectum, but he had no cough. He sank in a very short time. The whole of the large intestine was intensely inflamed and ulcerated, and the small intestines congested; an old vomica at the apex of the lung, surrounded by iron-gray pneumonia.

The pulmonary symptoms were masked; he had no cough, but the severity of the abdominal symptoms, dysentery of an acute form, rapidly led to a fatal result.

CASE LXXXIII. *Phthisis. Ulceration of rectum and sigmoid flexure. Hemorrhage from the bowels. Ulceration of the appendix cæci.*— — was admitted into Guy's under my care March 18th, 1857. He was a married man, of temperate habits, who had considered himself in health till one month before admission; his principal symptom had been discharge of blood from the rectum with diarrhœa; he had cough, had rapidly emaciated, and become completely blanched.

On examination of the chest, we found some flattening, with imperfect mobility of the left apex, soft mucous rattle, with increased resonance of the voice. The abdomen was contracted, and free from pain. There was but little doubt that he had phthisis; there was no evidence of external hæmorrhoids, and the administration of the compound logwood mixture of Guy's, at once checked the diarrhœa and discharge of blood; none occurred after admission. Emaciation, however, rapidly increased, the cough became more severe, and the evidence of disorganization of the lung better marked; he died in one month; for several days he appeared in articulo mortis.

On inspection—the abdomen unusually collapsed; old pleuritic adhesions were found on both sides; at the left apex was a small vomica filled with pus, and the whole of the upper lobe presented patches of red hepatization, minute tubercles, and iron-gray consolidation; at the upper part of the lower lobe there was also a vomica, and a similar condition as in the upper lobe. The right lung was less affected; the bronchi were filled with purulent mucus; the larynx presented a small ulcer on its inferior vocal cord, and the aryteno-epiglottidean fold was very œdematous; the heart was normal; there was no post-mortem solution of the stomach; the intestines, especially the small, were empty and contracted; the transverse colon presented a sigmoid twist near the spleen; in the lower part of the ileum were a few tubercles, and commencing ulceration. The ascending and transverse colon contained scybala, and presented several ulcers, oval in form, about half an inch in breadth, with injected irregular margins. In the sigmoid flexure and rectum, the whole of the mucous membrane was injected, almost covered with patches of ulceration, and in some parts were portions of adherent diphtheritic membrane. The appendix cæci was twisted in a sigmoid form; at the right of the cæcum, near its terminal third, it became very much dilated; the mucous membrane at this part was entirely destroyed, and the muscular coat much hypertrophied. The mesenteric glands were considerably enlarged. The kidneys, liver, and spleen, were healthy.

The ulceration of the rectum and sigmoid flexure had led to the hemorrhage which blanched the patient; in this state of exhaustion the disease of the lung very rapidly advanced. It was not the part of the intestine usually affected in phthisis; and he had no pain, distension of the abdomen, or severe tenesmus; diarrhœa, with discharge of blood, were the most marked symptoms. The mesenteric glands were more than usually affected. The appendix cæci was so diseased as would probably have led to extension into the peritoneum or the cellular tissue if life had been much prolonged. The loss of blood apparently hastened the diseased action in the intestine rather than diminished it; and although the purging was checked, the patient never appeared to rally to any extent. He was unable to take cod-liver oil, but appeared partially benefited by hydrochloric acid, with small doses of opium and calumba.

These instances, and many others which might have been adduced, show the general constitutional character of phthisical disease; and that although it may manifest itself with greater severity in one organ than in another, we should closely observe the state of other

viscera, as having a most important influence on the curative condition of the disease; that these simultaneous developments of morbid action go on very insidiously, as in the diseased appendix in the last case; although on the verge of fatal peritoneal perforation, it would not have been known unless by post-mortem inspection; and lastly, that although the general state of strumous disorganization may be past the stage of reparative action, much may be done in partially relieving distressing urgent complication.

CHAPTER VIII.

ON DISEASES OF THE CÆCUM AND APPENDIX CÆCI.

THE diseases of the cæcum and of its appendix, are of a character so peculiar and important, as to call for special consideration.

To a certain extent, the cæcum is apart from the direct current of the contents of the alimentary canal. The valvular opening from the ileum enters two to four inches from its lowest part; and the capacity of the cæcum is several times greater than that of an equal length of the ileum. The contents of the canal move more slowly, and become less fluid in their character. The mucous membrane is destitute of villi, but is exceedingly vascular, and furnished with numerous solitary glands; and at the termination of the cæcum towards the iliac side generally, is the appendix, an elongated sac opening into the intestine, and pouring into it the secretions from its lining membrane, which is composed of gland follicles.

At this part of the intestine the longitudinal fibres assume a different arrangement; they here form three bands, which arise from the position at which the appendix is attached, and are continuous with its muscular layer.

The cæcum is situated in the right iliac fossa, and is only covered by peritoneum on its anterior and lateral surfaces; a considerable quantity of loose cellular tissue separates it from the fascia covering the psoas and iliac muscles, and the nerves and vessels in relation with them. The mobility of the cæcum is therefore considerably less than the jejunum or ileum; but in this respect there is much variation, being sometimes much more freely covered by peritoneum than at others; so far is this the case, that it is occasionally found close to the vertebral column, with a long mesentery, and the right iliac fossa is completely covered by peritoneum.

This mesenteric attachment is far from being of rare occurrence, and is important to bear in mind in explaining the position which the cæcum will assume after great distension.

Its unusual freeness allows the cæcum to pass into hernial sacs, and sometimes to revolve on its mesentery, so that its lower part may be directed towards the diaphragm. I observed this state in a patient who had died from phthisis (Case LXXXVI.); it was not known to have produced any symptom during life, but it is evident

that distension of it in this condition might readily produce some constriction of the intestine, and perhaps fatal result. Such actually happened in Case LXXXVII., in which an inverted cæcum was distended to the utmost, and terminated fatally.

The appendix presents characters still more diverse; but some of these appearances are the result of pathological changes, which we shall presently consider. It is generally 3 inches in length, but varies from $1\frac{1}{2}$ to 5. It is attached on the inner aspect of the cæcum by folds of peritoneum, constituting a mesentery. There is sometimes greater freedom of movement; at other times it is completely tied down at the brim of the pelvis, or partly behind the cæcum, or curved in a sigmoid form to the right side.

The ileo-colic valve prevents (in a normal state of parts) the regurgitation of fluid from the large to the small intestine; the greater the distension of the cæcum, the more closely are the component parts of the valve compressed; after death the colon may be fully distended, without escape of fluid, into the ileum. Dr. Brinton and Mr. Roper have shown that if the ileum be also over-distended, the valve ceases to act; there is equal pressure on both sides, and the contents of the cavities may intermingle, or pass from the cæcum into the ileum.

The secretion of the cæcum is alkaline in its character. Tiedeman and Gmelin considered it acid, but in many that I have examined, it has been found alkaline. Chemical action probably takes place on particles of alimentary matter left unacted upon by the gastric juice, and by the secretions poured into the small intestine.

This action is very much less than that which takes place in the small intestine, and there does not appear to be sufficient warrant for the statement that the cæcum constitutes a second stomach, and that true digestion here takes place. It is more probable that the watery parts of the chyme, if the semi-fæcal contents of the ileum may be so called, become absorbed by a very extensive capillary circulation; and that the glands remove from the blood excrementitious material no longer of any service to the system.

The appendix is an elongated gland of very simple character, reminding of the pancreatic cæca of the intestine of the fish; as far as is at present known, its secretion is of the character of ordinary mucus. Since the feces here become more solid, were it not for such a secretion, assisted by that of the ordinary mucous follicles, adhesion would be more likely to take place with the parietes, and distension be the result. The secretion is poured out at that part which is most likely to effect this separation, namely, at the origin of the triple muscular band.

Pathology.—The unusual mobility of the cæcum, which has previously been referred to, is of a congenital character; but may induce serious pathological conditions, as before mentioned.

Villi cease at the ileo-colic valve, but we sometimes find in the cæcum and ascending colon elongated processes, resembling enor-

mously hypertrophied villi scattered over the mucous membrane. In a case which recently occurred at Guy's, they were nearly half an inch in length, about one line in breadth, and covered the cæcum and ascending colon, but were not known to have produced any symptom, or had any influence on the cause of death.

Distension.—Abnormal distension of the cæcum is sometimes the consequence of obstruction in the colon, — its own muscular parietes contract with less than their wonted vigour, and easily become distended by the accumulation of feces or of flatus. It is probable that diminished secretion from the appendix cæci may favour this accumulation of feces; which is often amongst the exciting causes of serious disease, and requires attention. Considerable fecal distension in the cæcum and ascending colon produces pain in the iliac region, and by pressure on the last dorsal and genito-crural nerve, induces pain over the hip, as far as the great trochanter, or in the groin, the testicle, &c.

The pain is sometimes of a more acute character, resembling colic, and excites considerable alarm. Dr. Copeland mentions œdema of the right leg as a result of distended cæcum; this I have not observed, except with very feeble power, or a varicose condition of the viens. Pressure of this kind would, doubtless, perpetuate and aggravate varicose condition of the veins of the lower extremity.

Many of the cases of pain in the region of the cæcum arise from an inactive condition and distension, and the symptoms entirely disappear when the colon is gently but freely acted upon, and emptied.

Edema of the mucous membrane is often observed with renal anasarca, and with long-continued congestion of the vena porta.

Congestion.—The depending position of the vessels often produces a passive fulness of the capillaries of this part of the alimentary canal; but we also find an active congestion, as shown by arborescent injection of the minute vessels. This is sometimes produced probably by medicine administered a short time before death; as the elaterium powder in renal, hepatic, or pulmonary ascites, &c., or is the result of the transmission of irritating substances and secretions from the small intestine, as an excess of bile or excreta of an acrid character, undigested food, &c.

Inflammation.—The distension of the cæcum, to which we have previously referred, induces local enteritis; inflammation of the mucous membrane, of the cæcum, and of the peritoneum which invests the part. These constitute a numerous class of cases, which are happily more tractable than those in which peritonitis is set up by a concretion in the appendix cæci. The mucous membrane is congested, its secretion altered, the feces adhere to it, the muscular coat is unable to propel the contents, which constitute a tumour felt on palpation, and the inflamed peritoneum produces tenderness. In some cases, this tumour consists of portions of intestine united

by inflammatory adhesions, and in still more rare instances it is composed of effusion behind the cæcum, in the iliac fossa.

Direct continuity of mucous membrane with the ileum appears in many cases to be the cause of disease in the cæcum; we find this in typhoid fever and in strumous disease, in which the ileo-colic valve is often acutely inflamed, swollen, injected, and ulcerated.

The cæcum is found acutely inflamed in some cases of dysentery; it becomes injected, the mucus scanty, feces adherent, or the surface covered with a delicate false membrane. These states are frequently observed in dysentery, the cæcum being affected as a part of the colon from continuity of structure.

Gray discoloration.—As the result of chronic disease, congestion or inflammation, we find gray discoloration, sometimes general, at other times as minute zones around the solitary glands; or there are small circular ulcers, which have been believed to commence in the solitary glands, or mucous follicles.

A *granular condition* of the mucous membrane, as if minutely studded with particles of sand, appears to be the result of long-continued slight inflammation, and is associated with thickening of the mucous and submucous coats.

Ulceration and perforation of the intestine are much more frequently found associated with disease of the *appendix* than with ulceration of the cæcum itself; this, however, is sometimes the case. When perforation from ulceration of a *non-cancerous* character takes place, the attached surface is often affected. The disease then extends into the cellular tissue in the iliac fossa; pus burrows beneath the fascia, and opens below Poupart's ligament, on the thigh, or near the crest of the ileum. These cases are, however, rare; ulceration of the appendix cæci much more frequently leads to adhesion of the peritoneum, fecal abscess, or general peritonitis.

Cancerous disease not unfrequently attacks the cæcum; sometimes the ileo-colic valve, and the anterior surface, extending into the peritoneum; at other times the posterior surface, involving the iliac fossa, and spreading beneath it. Each form of cancer is observed, medullary, scirrhus, epithelial, and colloid, but scirrhus cancer is much more rare than at the sigmoid flexure of the colon.

The *tricocephalus dispar* is described as being frequently present in the cæcum. I have only observed them about three times from many hundreds of inspections, in very many of which the intestines were examined throughout with care.

I have more than once observed, attached to the mucous membrane of the cæcum, elongated villous processes, half an inch to an inch in length. In a recent instance of this kind, twenty or more of these were found in the cæcum; they might be considered small benign polypoid growths, or were perhaps congenital; some polypi from the mucous membrane of the colon closely resemble an inverted appendix epiploica.

Appendix. Increase of length.—The appendix is sometimes five

or six inches in length, and perfectly free in its movements. It may be free among the coils of the small intestine, or in other cases becomes adherent at the brim of the pelvis to the parietes of the abdomen, or to the mesentery. In this way loops become formed, which in many cases become the cause of fatal internal strangulation, a portion of small intestine passing beneath the band thus formed. Cases have been recorded of the appendix being found in a hernial sac.

Atrophied.—The orifice of the appendix is occasionally obliterated, and the appendix itself bound down by adhesions; in this way it becomes wasted, and at last almost destroyed.

Dilated.—This takes place from obstruction at the orifice, or near to it, so that the secretion is unable to make its escape; the canal dilates, and becomes $\frac{1}{4}$ to $\frac{1}{2}$ an inch in diameter, the walls sometimes thickened, and the muscular coat hypertrophied, as if the attempt had been made to overcome the obstruction, or it becomes exceedingly thinned almost to perforation; when so dilated it is filled with thin mucus, and the follicles have the appearance of minute semi-transparent cysts.

Concretions.—Substances of very varied character are found lodged in the appendix cæci, and whilst sometimes harmless, often produce very serious consequences. Some are extraneous, others are entirely formed within the canal itself; and, lastly, there are those which have a nucleus consisting of some foreign substance, but become covered over by layers of concretion, from the irritation they produce.

1. Extraneous bodies are found, consisting of nails, pins, stones of fruit, shot, bristles of a tooth-brush,¹ entozoa, and most frequently feces.

2. Formed in the appendix, as concrete or albuminous mucus. These are not uncommon, and constitute firm semi-transparent masses, which, when dry, are fragile, and free from earthy matter.

3. Calculi, which generally present a nucleus of feces, or of some foreign body.

I have frequently found the appendix filled with feces: sometimes in its whole length, or forming one or more hard nodules. These minute fecal masses very frequently form the nucleus of calculi, and become incrustated with layers, composed of carbonate and phosphate of lime, according to the analysis of one of these by Dr. Odling, as also the analysis of Dr. Golding Bird. A concretion, examined by Dr. Prout, was found to consist of phosphate of lime, with a little carbonate, and small quantity of animal and oleaginous matter.² Thus constituted, layer after layer becomes applied, till the size of a cherry-stone is attained; and many of the so-called cherry-stones in the appendix are thus constituted. The calcareous matters appear

¹ Transactions of Pathological Society, 1855. Mr. N. Ward's case.

² Medical Gazette, vol. vi.

to be derived from the mucous membrane itself, in the same manner as a calculus in the urinary bladder becomes incrustated with phosphate of lime from the abundant mucus thrown out from the irritated surface. In some cases, a larger size is attained, and the mass becomes as large as a date-stone, or a hen's egg. In the museum of Guy's (No. 1893²⁵) is a large calculus, the size of a hen's egg, its surface rounded and fissured; it was removed from a sinus leading from the parietes of the abdomen to the cæcum; no appendix was found, but a large abscess extended from the cæcum to the liver. The calculus was composed of phosphate of lime, with alkaline chlorides.

In some, it is very difficult to discover a nucleus, a white laminated substance being presented throughout. The nucleus, however, may be exceedingly small, as in a case described by Mr. N. Ward, where the bristle of a tooth-brush formed the centre of a calculus; or it may be a portion of pin, or a hair.

Diminished contractile power of the muscular coat, with distension of the intestine and over-exertion, are the probable causes of the propulsion of feces into the appendix; or it may be that the peristaltic contraction is rendered irregular by an irritated condition, from acrid and crude materials impelled into it, and that this irregularity of action causes the feces, perhaps more fluid than normal, to pass into the appendix.

However produced, any concretion in this part often leads to very serious results.

I. It excites irritation and ulceration of the mucous membrane, followed,

II. In most cases, by extension through the muscular coat, which may be limited to that part, or extend through the peritoneum.

III. The perforation sometimes sets up inflammatory action of a purely local character; effusion of fibrinous material takes place, adhesions form and prevent extension to the general surface of the peritoneum. Coils of the small intestine may be thus firmly united to the cæcum, and constitute a compact mass, felt on examining the abdomen.

IV. The inflammatory action, although local, may be of less organizable character, and suppuration takes place, constituting an abscess, into which more or less feces may escape. The subsequent course of this abscess is very various: 1. It may constitute a dried mass of semi-calcareous product. 2. After sudden exertion, the adhesions which localize the pus break down, and extravasation takes place into the general cavity of the peritoneum, with speedily fatal result. 3. It may pass into the intestine by a second opening, and thus be harmlessly discharged; this may be into the ascending colon or the ileum; or it burrows down into the pelvis; and in a specimen in the Guy's Museum, an elongated and ulcerated appendix had opened into the rectum. 4. The cellular tissue behind the cæcum becomes involved, the abscess extending sometimes

upward behind the ascending colon, or down towards Poupart's ligament, the latter opening either below that ligament, or near the anterior and superior spinous process of the ileum.

In a case under Dr. Barlow's care, in Guy's, this ulcerative extension of cæcal disease destroyed the parietes of the iliac artery, and led to almost immediate death, from the sudden and uncontrollable hemorrhage.

Abscesses of this kind sometimes contain feces ; and we have here but little chance of preventing repeated attacks of inflammatory action, the strength at last giving way, or is cut short by intense and general peritonitis.

V. This perforation sometimes takes place directly into the peritoneum, and sets up peritonitis so severe and general that a fatal result follows in a few hours, or at most in a few days.

These are terrible cases, with scarcely any premonitory symptoms ; the patient is struck down in fatal collapse, resembling the equally fatal cases of perforation of the stomach, where scarcely any indication has been given of such an attack. In fact, sometimes the pain is not situated in the region of the cæcum, but above, nearer the stomach ; whilst I have seen a case where the pain preceding fatal collapse was in the region of the cæcum, where the perforation arose in the stomach. It is difficult to explain this occasional event, but generally speaking, the pain is situated in the neighbourhood of the diseased viscus. The position of the concretion, whether fecal or otherwise, is various ; sometimes quite at its termination, at other times close to the opening into the cæcum ; so, also, the ulceration consequent upon it.

In strumous patients these concretions more readily tend to an unfavourable result, leading to perforation, and to fecal abscess or peritonitis ; but the appendix is itself the seat of ulceration, without the irritation of concretion ; and especially so in strumous subjects. In phthisis it is very common to find ulceration in the appendix cæci. Evidently, from the degeneration of tubercle and subsequent ulceration, sometimes several scattered small ulcers, at other times the appendix is almost amputated. This condition may lead to fatal peritonitis in the earliest stage of phthisis ; or the low organized product of struma is found in an earlier condition, either minute tubercles in the substance of the mucous membrane, or a large cheesy mass filling up its extremity.

Symptoms.—The symptoms of some of these pathological conditions have been already alluded to ; but in others no sign indicative of their presence exists during life. Death results from other causes ; and conditions are found which would have acted as disturbing causes, predisposing to serious if not fatal disease if life had been prolonged.

Distension of the cæcum is indicated by fulness and pain in the iliac region, especially when the erect posture is assumed ; or after walking it is generally associated with fulness in that part, dulness

on percussion, and slight febrile excitement with congested portal circulation, and with loaded colon. Hence we often find other symptoms, not arising from the cæcum, but from associated disease; thus depression of mental energy, sallow complexion, furred tongue, offensive breath, pain in the head, arise not from the condition of the cæcum, but from the retention in the blood of waste material, which would be thrown off, if the liver and excretory glands of the whole alimentary canal rightly performed their function. The mechanical distension, however, sometimes by its pressure leads to pain in the loins, or in the course of the last dorsal or genito-crural nerve, the pain extending over the dorsum of the ileum, or into the groin or testicle in men; in women it interferes with the proper function of the ovaries and uterus.

Irritation or inflammation of the mucous membrane of the cæcum may be productive of diarrhœa, and generally but slight pain in the region of the cæcum. It is, however, in most cases, only part of a more general disease of the mucous membrane: as in bilious diarrhœa, from acrid excreta poured into it; in dysentery, or in struma; disease of the mucous membrane alone, if I mistake not, is not productive of pain. If *all* the coats be affected, or ulceration have taken place, a very marked train of symptoms follow. After some irregularity of the bowels, either diarrhœa or constipation, generally the latter, and perhaps after more than wonted exertion, severe pain comes on, in many cases suddenly, in the right iliac fossa. The pain may be confined to this spot, and be accompanied by excessive tenderness, radiating over the abdomen, and be very quickly followed by collapse, and the signs of general peritonitis, extremely anxious countenance, sunken eye, cold extremities, distended and tympanitic abdomen, clammy partial sweats, failing pulse, and death in a few hours; or the tenderness and pain in the neighbourhood of the cæcum are accompanied with fulness, slight dulness on percussion. There are febrile symptoms, the skin is hot, the tongue slightly furred, the pulse often compressible and somewhat excited, local peritonitis is set up, in connection with ulceration or inflammation of the coats of the cæcum. These are the symptoms of what has been called tumphlo-enteritis. There is a gradual subsidence of these symptoms, the pain and distress cease, the fulness disappears, the bowels return to healthy action, and the patient is restored to health. Or the fulness, tenderness, and pain continue, and a more defined tumour is perceptible, repeated attacks of severe pain come on, and gradual loss of strength, or sudden accession of fatal and general peritonitis. The local peritonitis has given rise to suppuration or to fecal abscess; perforation of this abscess is the cause of the sudden collapse and speedy death. Or, we may have the same result as before described, but retarded for a time by local adhesions. Instead of peritonitis, diarrhœa may be set up, irritability of stomach, injected and brown tongue, failing pulse, and the ordinary symptoms of hectic fever. From this condition, even recovery sometimes takes

place, by the discharge of pus from the peritoneal abscesses into the intestine itself, or through the abdominal parietes; or the absorption of the fluid parts of the pus takes place, and a semi-cutaneous mass is left; if, however, fecal abscess have formed, recurrent attacks of peritonitis, with increasing prostration, generally lead to a fatal result.

There is a greater tendency to the local form of disease in early manhood than in later life. Many cases occur under 20, but the disease is not rare at later periods of life, 30, 40, or 50 years.

Diagnosis.—1. In the diagnosis of cæcal disease, it must be borne in mind that simple excessive distension of the cæcum is sometimes accompanied with severe pain.

2. That after blows on the abdominal parietes, suppuration sometimes takes place among the muscles, and may be accompanied by local peritonitis, without cæcal disease.

3. It must be remembered that suppuration connected with the right kidney, or its envelops, sometimes extends into the iliac fossa.

4. That we may have disease of the vertebra, or iliac bones, leading to suppuration.

5. Pain arises in the course of the last dorsal nerve from diseased spine, or in the course of the genito-crural nerve from renal calculus, and might be confounded with cæcal inflammation, &c.

6. Inflammatory disease in connection with the ovaries, leading to local peritonitis and severe pain, is frequently mistaken for cæcal disease.

7. Cancerous disease of the cæcum; and

8. Disease of the ileum in struma, or after typhoid fever, as well as—

9. Strumous peritonitis, must each be remembered in forming a correct diagnosis.

The pain in simple distension of the cæcum is less severe. Disease in the parietes in a very short time manifests its local character. The pain and swelling connected with suppuration of the spine or kidney differ in position; that of the kidney is more in the loins, or if extending anteriorly, nearer to the median line. Spinal suppuration extends beneath the iliac fascia, and would be distinguished from cæcal disease, burrowing beneath Poupart's ligament, by the fecal character of the latter.

The neuralgic pains connected with urino-genital disease, is not accompanied with the tenderness or the other symptoms of intestine affection. It is, however, sometimes difficult to distinguish inflammatory disease about the right ovary from cæcal disease. There may be in both excessive tenderness, febrile excitement, constipation, severe pain in the lower part of the iliac fossa. The symptoms which will serve to guide us are, that the ovarian disease comes on with irregular menstruation, or with sudden cessation of that flux, and that the pain is situated lower down in the hypogastric region; in some cases, even observers have believed that they have

felt the swollen ovary. Dr. Barlow records a case in which peritonitis of such a severe character was set up around an inflamed ovary that the patient succumbed. In cancerous disease of the cæcum, which sometimes occurs in young subjects, it is almost impossible, unless there be indication of cancerous disease in other parts, rightly to diagnose its character. These are, however, rare cases. In strumous peritonitis, the disease is not confined to one part of the abdomen; but in severe cases, the intestines are so completely united by peritoneal adhesions as to move *en masse*. It is impossible to distinguish perforation of the ileum in struma or phthisis from perforation of the appendix cæci; it is, however, of little moment, since the only remedial agents which are likely to be of service in these almost universally fatal cases are precisely similar in both.

Prognosis.—In cases of cæcal distension, where the mucous membrane only is affected without ulceration, our prognosis is generally a favourable one, unless we find the patient of a strumous habit, in whom there is greater tendency to ulceration and perforation. Where, again, there are the symptoms of local peritonitis, many do well; the reverse, however, is the case where the onset of the disease is marked by severe collapse, or by urgent vomiting and general abdominal pain.

Causes.—*Predisposing causes* are strumous diathesis, sedentary habits, habitual constipation, typhoid fever, &c.

The *exciting* causes are, over-exercise, much standing, violent athletic exercises; in many cases, it has come on after very long pedestrian excursions, indigestible food, blows upon the abdomen, constipation, or irregular bowels.

Treatment.—I cannot urge in too strong language the importance of avoiding in cæcal disease powerful drastic purgatives. They tend to increase the disease by inducing violent peristaltic action; by increasing the irritation of an already inflamed membrane, they hasten ulceration, and if that have taken place, or peritonitis resulted, the only hope of the patient is taken away.

If there be simple distension, with only very slight pain in the erect posture, we should enjoin rest, and administer hydrargyrum cum eretâ, followed by a dose of castor oil, or a castor oil enema; afterwards mild aperient tonics, as the compound gentian mixture.

If tenderness exist, or there be the symptoms of local peritonitis, rest is still more positively required; the patient should not move from the bed on any consideration. Local depletion is exceedingly valuable; 10 or 15 leeches applied to the region of the cæcum, and warm fomentations, are often followed by most marked benefit. At the same time, mild mercurials should be administered, with opium, equal parts of gray powder and Dover's powder, or calomel with opium. This may be combined with saline medicines, with the acetate of ammonia and bicarbonate of potash or nitric ether, according to circumstances; but little food should be taken, only bland unstimulating nourishment. It is a great temptation, when the pain

has subsided, and the febrile excitement disappeared, to try and get out of bed and use slight muscular effort; such is exceedingly injudicious, and is sometimes followed by fatal result.

The means just mentioned often induce action on the bowels; but if not, although the pain have subsided, it is better to wait, or to administer a gruel or castor oil injection, than to give more powerful purgatives, as aloes, jalap, senna, colocynth, scammony, &c.

If there be persistence of slight pain, with fulness and dulness, it is well to continue the mercurial, and either to repeat the leeches, or to apply a blister to the iliac region.

Afterwards iodide of potassium, with mild vegetable tonics, are of great service, still maintaining rest. Irritability of stomach sometimes arises, which may be alleviated by saline effervescing medicine, hydrocyanic acid, by soda-water, with milk, or brandy, &c.

If there be evidence of suppuration or of fecal abscess, whilst we endeavour to limit the action by slight counter-irritants, by occasional local depletion, we must sustain the power of the patient by quinine, by support, and by tonic treatment. Opium is often of great value in its anodyne and narcotic action, in checking peristaltic action, relieving pain, soothing an over-excited nervous system, the excitement of exhaustion, and often procuring refreshing sleep.

Where there is collapse and tympanitis, evincing perforation of the appendix or intestine, nothing should induce us to administer any aperient, or induce action from the bowels. We desire to limit the mischief produced by checking the movement of the intestines, and to diminish inflammatory action by soothing the nervous system; opium must be given very freely, alone or with calomel, and only a very small quantity of food administered.

Cases LXXXIV., V., VI., and VII. are instances of abnormal position of the cæcum—in one, connected with fatal obstruction; and which is very similar to one recorded by Mr. Avery, in the *Pathological Transactions* for 1850, where the operation for artificial anus was performed.

CASE LXXXIV. *Unusually free cæcum.*—John J—, æt. five years, on November 1st, 1856, whilst running down stairs, fell upon an earthen vessel that he was carrying; the internal jugular vein was divided, and he died about an hour afterwards from the loss of blood.

The viscera were found to be healthy, but in the abdomen the cæcum was situated among the small intestines, quite surrounded by peritoneum, and as free as a portion of ileum.

CASE LXXXV. *Unusually free cæcum. Fatty degeneration of organs.*—A young woman who had lost a considerable quantity of blood after miscarriage, gradually sank in six weeks. On inspection the heart, liver, kidneys, &c., were found to have undergone fatty degeneration. The uterus contained sloughy lining membrane, and apparently some decidua.

The cæcum was attached by a long mesentery to the right side of the spinal column, so that the whole iliac fossa was perfectly free, and covered by peritoneum.

These conditions in the last two cases were congenital; but we are not acquainted with the cause, whether from any arrest of

development or not. Had any subsequent disease been set up in the part, the symptoms might have become considerably modified.

CASE LXXXVI. *Cæcum inverted. Phthisis. Local empyema. Large white kidneys.*—Alfred A.—, æt. 42, was admitted into Guy's, November, 1856, and died December 14th.

He suffered from phthisis. At the apex of the left lung was a small vomica with tubercles and iron-gray consolidation around it. In the lower lobe was an irregular vomica, and a sloughing mass of lung tissue, which communicated with local empyema at the base.

The heart and liver were healthy; the spleen lardaceous; the kidneys large, white, and mottled.

On examining the intestine, the appendix cæci was found to be long, and extending over the brim of the pelvis, where it was fixed. The rounded termination of the cæcum was directed towards the diaphragm as if inverted. The ascending colon was contracted, and attached deeply at the side of the right iliac fossa, directly opposite the ileo-colic valve, and at an acute angle with the cæcum. (See Plate IV. Fig. 1.) Very great distension of the cæcum in this twisted state might lead to obstruction, for the ascending colon appeared, even in this case, constricted by the sudden twist and acute angle.

No symptom had apparently been produced by this condition of the cæcum; but in a state of constipation, when the cæcum is distended with feces, considerable impediment to the free passage would be the result. It is probable there would be a greater tendency to ulceration, and to the passage of feces into the appendix cæci.

CASE LXXXVII. *Intestinal obstruction in the ascending colon. The cæcum twisted to the left side into the left iliac and hypochondriac regions. Death on the 20th day.* (Reported by Mr. Galton.)—Eliza S.—, æt. 40, a cook, was admitted into Guy's under the care of one of my colleagues on November 9th, 1856. She had lived regularly and temperately. There were marks of distension upon the abdomen, but she stated that she had never been pregnant, but that when a child her abdomen had been much enlarged. Her father died from phthisis. Her mother from dropsy. She was a seven months child, but enjoyed good health until she was fourteen years of age, when she fell against the kerbstone at the head of a well, whilst she was drawing water; pain in the loins, with difficulty in micturition and hæmaturia came on. Catamenia afterwards appeared, but were scanty. Many years ago she had jaundice, with great pain in the stomach, and was told she had inflammation of the bowels; she, however, had good health until ten years ago, when, during frosty weather, she fell down in a yard, striking her left side against the corner of a stool; she suffered from pain and tenderness at the part, with cold chills; the urine was scanty, but no blood was passed; after remaining in bed for three or four days, she felt no further inconvenience. Four years ago she had vertigo, pains in the head and in the bowels, with diarrhœa. The bowels have been frequently confined for three or four days together, but without known inconvenience. On admission into Guy's she was much anæmiated, her complexion rather dark; three days previously, without known cause, pains came on in the right side, extending to the umbilicus. No improper food had been taken, nor was there any stomach derangement. She felt chilly; the bowels were opened, and very slightly, at the time of admission. There had been no vomiting till a short time previously, afterwards everything was rejected. There was no tenderness of the abdomen, but it was distended and flatulent. The skin was cool and moist, the urine abundant, pulse eighty, the tongue slightly furred. A soap injection was administered, and $\frac{3}{4}$ ss of castor oil given.

November 11th. A small motion was passed, but no flatus, and she was unable to take nourishment. The abdomen was more distended, and there was tenderness in the right hypochondriac region; the pain paroxysmal, with a sense of twisting. Magnesia mixture with vinum opii was given every six hours.

12th. A portion of distended intestine could be seen at the umbilicus; in other

respects as before. Calomel gr. v, opium gr. j, were administered, and Oij of warm water injected into the rectum, and a hot poultice applied to the abdomen.

13/h. All the symptoms were aggravated; the vomiting was less, but the paroxysms of pain were very severe. Since the bowels had acted slightly after admission, it was thought advisable to give purgatives a trial, and colocynth and calomel, gr. v, were given every hour for four times, and the enema repeated.

14/h. The injection was returned, but without feces; the vomiting became stercoraceous, and the pain very severe. Opium, gr. j, was given every six hours.

15/h. There was less pain and distension of the abdomen, the pulse full, 92, the skin dry, the urine moderate in quantity.

17/h. There was extreme tenderness of the abdomen, and the stercoraceous vomiting as before.

18/h. An ivory tube was introduced into the rectum and retained for a short time; its withdrawal was followed by flatus and small fecal discharge, and afforded considerable relief.

20/h. Flatus was again passed.

22/d. There was thick stercoraceous vomiting; the tongue was dry, the pulse 86. The seat of pain was between the umbilicus and the scrobiculus cordis.

23/d. An injection of beef tea and eggs was retained for a short time, and was returned with small lumps of feces.

The fecal vomiting continued, the pain became more severe and general, with gradually increasing prostration, and she died on the 27th, about twenty days from the commencement of the symptoms.

On opening the abdomen the small intestine was found enormously distended, and the cæcum was situated in the left hypochondriac and iliac fossæ, forming a large, enormously distended, almost spherical sac; the appendix was situated on the left side. The whole of the visceral and parietal peritoneum was intensely injected, and covered with lymph. The right iliac fossa was filled by coils of small intestine, the parietal peritoneum being perfectly smooth. By attempting to unravel the intestine, and tracing the large intestine upward from the sigmoid flexure, which was normally situated and perfectly collapsed, a stricture was found about the middle of the ascending colon; the stricture, however, was situated near the brim of the pelvis, on the *left* side, and adhesion of the omentum was found at this part, between the ascending colon, sigmoid flexure, and a coil of ileum.

The line of obstruction was perfectly defined; all the intestine below being quite empty, collapsed, and non-injected. The obstruction was 4 ft. 4 from the anus, and appeared to have been produced by the cæcum revolving on the termination of the ileum, which was fixed by its adhesion to the sigmoid flexure. No transverse colon could be found, because it was hidden behind the cæcum near the left iliac fossa. (See Plate IV. Fig. 2.) On removing the intestine the stricture disappeared.

The mucous membrane of the cæcum was intensely injected, and a patch on the anterior surface was of a leaden colour; at the centre of this part was a minute slough, and perforation extended into the peritoneal cavity, but no fecal extravasation had taken place.

The mucous membrane of the ileum was healthy, but congested, and contained both solid and fluid feces. The stomach contained fluid fecal matter, as was found in the cæcum. The duodenum was healthy, and the liver, kidneys, spleen, &c. were normal.

The previous attack of inflammation in the bowels had probably led to the adhesion between the termination of the ileum and the sigmoid flexure; and this was one of the causes of the fatal obstruction. The cæcum was apparently unnaturally free, and its distension associated with this adhesion had led to the twisted and inverted position which was found after death. The pain had commenced at the seat of the disease, near the right iliac fossa, extending to the umbilicus. She had had severe falls and blows upon the abdomen, one in particular, in which she struck the right side, and which perhaps tended to produce displacement or inflam-

matory mischief. The bowels had generally been confined, but she occasionally had diarrhœa. The first symptom was pain in the right iliac fossa, and then constipation; the severe colic, distension, tenderness, and vomiting, were later symptoms. The mode of commencement appeared to indicate that it did not arise from simple impacted feces. For four days there had been no vomiting, which showed the absence of internal hernia, sudden strangulation, or intussusception. Nor were the symptoms those of enteritis, or acute peritonitis.

It was evident that there had been some chronic changes in the intestines or peritoneum, and it was difficult to decide the character of those changes.

No tumour could be felt; but there were three causes of obstruction left, between which it was exceedingly difficult to decide. 1. A slow growth connected with the intestine itself, as chronic contraction or cancer. 2. Old bands of adhesion; and, 3. Twisted intestine.

An approximate opinion was formed as to the seat of the obstruction; either that it was at the colon, or the termination of the ileum. The vomited matters were so fecal in their character that it was even suggested that the transverse colon might have formed a communication with the stomach.

The following are instances of a form of cæcal disease very frequently met with, arising from distension of the cæcum, inducing local enteritis, with partial peritonitis; the latter varying greatly in intensity, sometimes severe, at other times almost absent. They are related as briefly as possible. With proper care, and judicious treatment, most of these instances recover. The symptoms are less severe than those in which the appendix is ulcerated, or contains a concretion; they come on more gradually, the pain is less intense, the dulness and tenderness are entirely removed as the inflammation subsides, and the bowel is freed from its contents. As in cases of more general enteritis, purgatives do considerable harm; they fail to empty the distended bowel, increase the enteritis, lead to ulceration, and in some to perforation and fatal peritonitis. The benefit arising from the local application of leeches is very marked, and mild mercurials with opium are of great service; abstinence from solid food, and absolute rest are very important, and should be continued for several days after the subsidence of the pain.

In many there was evidently a tendency to strumous disease, and these patients are more prone to this form of malady.

CASE LXXXVIII. *Cæcal distension and inflammation.*—Crota W—, a strumous looking boy, an apprentice to a cook at a large tavern, after harder work than usual, was seized with severe pain in the abdomen on the right side; after a few hours this partially subsided, but again returned on his making exertion, so that he was obliged altogether to discontinue his work. The bowels were occasionally constipated.

He was of fair complexion, long eyelashes, his countenance anxious; the abdomen hot, tender, and full, especially in the region of the cæcum; the tongue was red, the pulse soft, the thoracic viscera normal; he had no vomiting.

Calomel, gr. j, opium, gr. ss, were given every six hours, and a hot poultice applied to the abdomen. Eight leeches were afterwards applied, and spare diet allowed.

He rapidly improved, and in a few days was convalescent. He was kept in bed, however, for a longer period, although all the symptoms had subsided.

The marked strumous character of this boy rendered the disease less likely to assume a favourable character; there is greater disposition to disease of the appendix in such diathesis, and few things are more painful than a fatal relapse after partial convalescence.

CASE LXXXIX. *Cæcitis*.—Benjamin B——, æt. 15, a pale, thin lad who had been employed on the river, was admitted into Guy's, January 14th, 1852.

About three days before admission he experienced griping pain in the abdomen, which increased in severity. The bowels were constipated, but there was no vomiting, nor could it be ascertained to have been caused by improper diet. There was fulness in the right iliac region, dullness and considerable tenderness. Eight leeches were applied, and of calomel and opium gr. j, each every four hours. On the 19th the pain had considerably diminished, but still much fulness and hardness remained; there was no febrile disturbance; the tongue clean, the pulse natural. The mercurial and opium were omitted.

February 3d. He felt much relieved, but had a haggard look; the eyes sunken, and occasional pain came on across the abdomen. There was no marked indication of progressive disease; the fulness in the iliac region gradually disappeared.

23d. There was again very perceptible fulness and some tumefaction in the right iliac region, and gurgling on pressure; slight pain had returned, the symptoms were, however, very much less severe than before, and he was allowed to move about the ward. He afterwards left the hospital convalescent.

The symptoms in this case were at first very severe, and warranted a very cautious prognosis. It was probably associated with strumous diathesis, and more than usual disturbance of the other abdominal viscera. There is much fear that slow strumous disorganization would extend in this case, and ultimately lead to fatal result.

The permission to set up led probably to the increase of the symptoms, but happily the relapse was not of a character to prevent his convalescence. This was an instance in which great care, nourishing diet, change of air, might be followed by complete restoration to health.

CASE XC. *Cæcal distension and inflammation*. Charles W——, æt. 19, admitted into Guy's, March 15th, 1848. He was a confectioner, and three months previously had had a similar attack. The bowels were generally constipated.

Five days before admission sudden pain came on in the umbilical region, which continued for one day and then passed to the right side; the pain was severe, but sometimes increased in severity; he took senna and salts twice, which acted freely, but with only partial relief.

On admission the countenance was expressive of much distress; the pain was in the right iliac fossa; the tongue was white, the bowels confined, and the pulse irritable.

Hydrargyrum cum cretâ, gr. iij, and pulv. ipecac. comp. gr. iij, were given every four hours, and on the following day a small dose of castor oil.

March 17th. The pain was much less severe, but the skin was hot, the sleep disturbed, the bowels open, the tongue injected at the edges, the pulse more full and softer, 92.

A blister was applied over the cæcum, and the medicine continued. The cæcal symptoms were much relieved, but on the 24th he had swelling, pain, and redness of the right wrist joint, resembling rheumatism; the skin was perspiring, the bowels constipated.

Dover's powder was given night and morning, and castor oil in small doses. He slowly improved, and left the hospital convalescent on April 11th.

This case was increased in severity by the purgatives given before admission, and by the absence of proper rest. It appeared that he had had a similar attack previously. It was not thought advisable to repeat leeches, but application of a blister was followed by considerable relief. It may be doubted whether the pain in the right wrist was really rheumatism; pyæmia is found in connection with some cases of cæcal suppuration, but we had no proof of suppuration here, nor did the mild character of the complaint bear resemblance to pyæmia; however, it considerably retarded his convalescence.

CASE XCI. *Cæcal distension and inflammation*.—Jane L——, æt. 24, a single woman, engaged in domestic service. She was of fair complexion. Three weeks before admission she experienced severe pain in the region of the cæcum, and castor oil was administered in several ʒss doses, but without effect. On admission there was severe tenderness at the right iliac fossa, and other symptoms of cæcal disease. Leeches were applied, gray powder and Dover's powder given, with saline mixture.

The symptoms gradually disappeared, but diarrhœa came on; the pain and fulness subsided, and she steadily convalesced.

In this case constipation preceded the attack, but the purgatives produced no beneficial effect; the castor oil increased the pain, which only subsided on the application of leeches and the administration of opium, mercurials, with rest, &c. It was an indication of the enteritic character of the affection.

CASE XCII. *Cæcal distension and inflammation*.—William W——, æt. 43, a tailor, and of intemperate habits, was admitted into Guy's, December 24th, 1856.

For two months he had suffered from pain in the region of the cæcum, and the bowels had been kept open by the action of medicines. Two years before the bowels had been very irregular.

He had been out shooting, and the pain gradually increased; coughing produced a stitch in the side; at last, whilst pulling on his boot, the pain became so severe that he could not rise.

On admission there was fulness and tenderness in the region of the cæcum; the pain was increased by respiration, there was slight dulness on percussion, and the bowels confined.

Ten leeches were applied to the region of the cæcum, an injection of gruel and salt administered, and gray powder and Dover's powder, of each two grains, given night and morning. Low diet and rest. The pain and tenderness disappeared after the leeches were applied. The bowels acted, but remained more or less confined.

On January 1st he was free from pain, and had considerably improved; and on the 12th he was considered well, all the fulness and tenderness in the region having entirely disappeared.

CASE XCIII. *Cæcal distension with inflammation*.—George W——, æt. 31, was admitted into Guy's, August 31, 1850. He was a man of light complexion, who had worked at a candle manufactory. For three months he had been an out patient at the London Hospital, complaining of pain in the region of the cæcum when he moved about, but relieved by rest.

He gave up his work nine days before admission, suffering in the same manner; the bowels were not constipated; the tongue was clean; the pulse compressible.

On examination, immediately above the iliac fossa was a small rounded mass; tender on pressure. Rest in bed was enjoined, and calomel with opium prescribed.

The patient left the hospital relieved, in one month. The case is interesting, as showing cæcal disease in its mildest form; the pain absent during rest, but preventing the patient from taking exercise. The neglect of such condition, or its frequent recurrence, would probably cause ulceration of the cæcum or of the appendix, and more serious peritonitis. After the subsidence of the more active symptoms, preparations of steel, and vegetable aperients, are very likely means of preventing its recurrence; as rhubarb, ipecacuanha, with aloes and soap; or the compound gentian mixture, &c. Violent muscular exercise should be carefully avoided.

CASE XCIV. *Cæcal inflammation simulating hip-joint disease*.—James C—, æt. 11, living at Gravesend, was admitted into Guy's under my care February 18th, 1857. He was a strumous child, but stated to have had good health till three months before admission. He was roughly used while at work, beaten, and did not feel well afterwards; pain came on in the abdomen; but it did not become severe till a short time before admission, when his foot slipped.

He had severe pain in the region of the cæcum, much aggravated on pressure; the rest of the abdomen was soft; the tongue normal; pulse 75. The bowels were confined and the urine normal. The right leg was flexed at the thigh, and could not be straightened; rotation of the hip, striking the heel, &c., did not produce pain, nor was there any pain in the knee or in the spine. Seven leeches were applied to the right iliac fossa; gray powder, gr. ij, Dover's powder, gr. iij, three times a day, with rest and low diet, were ordered.

The leeches and hot poultice afforded much relief; he was able then partially to straighten the hip, which had evidently been drawn up to relieve the pain. The bowels on the second day acted by soap injection, and on the third day the leg was straight. The pain and fulness gradually ceased; he has, however, kept in bed, the medicine continued once a day for a short time, and animal food allowed very sparingly. The bowels acted without trouble. On March 2d he was convalescent; cod-liver oil was given three times a day, and on the 13th he left the hospital well.

CASE XCV. *Local peritonitis. Cæcitis (?)*.—Martha P—, æt. 19, admitted into Guy's, October 3, 1855. She was a tall girl, who had been a servant, and for some time had not enjoyed good health. She had been lately in St. Thomas's Hospital with pain in the side, &c. She menstruated a fortnight before admission, and a few days afterwards pain in the left side came on again. This for three or four days gave place to severe pain in the right iliac fossa. The bowels had been sometimes purged, at other times confined; latterly the former.

On admission she was very ill. The iliac pain was very severe, with great tenderness on pressure; the abdomen was collapsed; the knees drawn up; the countenance expressive of great distress; the skin hot; there was no vomiting; the tongue slightly furred; the pulse small, somewhat hard, 128; the sound of the heart sharp; the act of respiration produced pain.

Hirudines xvi, applicentur regioni cæci. Hydrarg. chlor. gr. j, opii gr. j, ter quotidie sum.

The pain gradually subsided, the tenderness and fulness ceased,

and in about ten days the patient was convalescent. It was questionable whether this severe pain was not ovarian irritation. The pain was rather lower than usual in cæcal disease, less dulness in the iliac fossa existed, and the onset of the attack was directly after the cessation of menstruation. Partial peritonitis evidently existed, but whether set up by ovarian or cæcal disease could not be satisfactorily ascertained.

The following case is of great interest, as showing a state of *inflammation of the cæcum*, in itself probably remedial, and allied, if not identical, with those previously detailed very briefly, but rendered fatal by its association with phthisis.

CASE XCVI. Ann C—, æt. 46, was admitted into Guy's under my care February 28th, 1855, and died March 30th. She was a married woman, who had resided in Southwark, and in her employment as a milkwoman had been much exposed to the weather. Some of her family had died from phthisis. For several years she had been subject to cough, but it had been more severe during the last eighteen months; menstruation had ceased, and her health had been much worse a few months before admission, and once she had suffered from hæmoptysis. She was thin and haggard, the face slightly congested; the physical signs were those of general bronchitis with phthisis. The pulse was irregular and intermittent, and there was a systolic bruit below the nipple. The bronchitis was slightly relieved, and then the signs of disorganization of the lung became more marked. Three days before death severe pain came on in the right side, accompanied with increased dyspnœa. Some irritation of the bowels supervened, but not to a great extent; she gradually sank.

On inspection, the abdomen was distended and tympanitic. The larynx was healthy, the bronchi were much dilated; this was very marked on the right side, and on section the dilated tubes constituted a considerable portion of the surface. The mucous membrane in them was much congested, and covered with tenacious mucus; they were surrounded by crepitant lung. The bronchi on the left side were much less dilated. Left pleura was universally adherent, the right only at its apex; at the right base the pleura was covered with pus-like lymph, and about a pint of pus was effused; a small vomica situated immediately beneath the pleura had given way into the serous membrane. There was a large irregular vomica at the left apex, bounded by a smooth membrane with several intersecting bands. In the lower lobe were other smaller vomice and numerous miliary tubercles. The heart was healthy. There was a firm clot in the right ventricle, extending into the pulmonary artery. *Abdomen*.—There were old adhesions, generally in the peritoneum, and several adherent cretaceous deposits.

Cæcum was inflamed, and presented raised patches about the size of peas, soft, situated in the mucous membrane and containing pus; some of these collections of tuberculo-inflammatory product had given way, and slight ulceration was the result. The ascending colon was in a similar condition. The appendix cæci and the other portions of the intestine were healthy. The liver fatty, kidneys healthy, so also the mesenteric glands.

This case might be considered as one of chronic bronchitis, and afterwards of phthisical disorganization. In the cæcum it is probable that the solitary glands became diseased, and low organized product effused, which led to the production of minute abscesses and ulceration.

In many of the cases which we have detailed, the patients were of strumous diathesis, but the disease perhaps had not advanced to disorganization or to ulceration. There appears to be a greater tendency to this local enteritis of the cæcum in strumous than in other subjects. The condition just described is an earlier con-

dition of what we so frequently find in both the cæcum and ileum in phthisis; here, however, the cæcum only was diseased.

CASE XCVII. *Perforation of the cæcum. Abscess extending to the groin. Phthisis.*—(From the Museum Records.) Michael R—, aged 34, was admitted into Guy's under Mr. Key's care in September, 1835; he was a temperate man, but of strumous habits, by trade a compositor. For a year and a half he had been subject to flatulence, indigestion, and occasional purging. Four days before admission, after four days of diarrhoea, he experienced sudden pain in the right iliac fossa, where was a firm swelling and constant pain; the bowels were variable, the constitutional disturbance was slight, the pulse soft and quickened, the tongue slightly furred. Leeches were applied, and antimony administered; suppuration became more manifest in the tumour, fluctuation was distinct, and hectic supervened. Six weeks after admission into Guy's, an opening was made into the tumour, and 3viij of offensive pus evacuated; symptoms of phthisis gradually developed themselves, and he died the following June. Two openings existed above the right groin, which communicated with a contracted space, surrounded by dense membrane. The cæcum was found bound down by firm cellular adhesions to the neighbourhood of Poupart's ligament. The appendix was thick, opaque, and filled with a pasty fluid, and communicated with the cæcum. A sinuous canal of $1\frac{1}{2}$ inch in length, narrow and apparently closing, led from the opening on the surface into the cæcum at its posterior part, nearly opposite the opening of the ileum. The coats of the intestine were thickened, and the mucous membrane did not appear diseased, except a few contractions arising from cicatrices. (Prep. in Museum, 1879²⁰.)

In this case the patient survived the immediate effects of the cæcal disease; the perforation, instead of setting up inflammation in the peritoneum, produced suppuration in the cellular tissue of the iliac fossa, which was discharged near the anterior and superior spinous process. If there had not been any cicatrices in the cæcum, we should have questioned whether the disease had not commenced in the iliac fossa, and afterwards extended into the cæcum, as we have found to occur in connection with the sigmoid flexure. The commencement resembled that of ordinary cæcal disease; but in its progress it might easily have been mistaken for abscess in the parietes.

Disease of the appendix sometimes exists for some time without manifesting any symptom; this is especially the case in phthisis; the appendix often presents strumous deposit in larger or smaller masses; is often filled with feces; and not unfrequently we find it distended with thin pus, with occlusion of the orifice, and with ulceration—see Case LXXXIII. (Strumous Disease of Intestine)—without any pain or tenderness having been complained of.

CASE XCVIII. *Bronchitis, phthisis. Diseased appendix cæci.*—Thomas S—, æt. 40, admitted January 7th, 1857, into Guy's, and died on the 20th. He was a tall, spare, anæmiated man; he had been ill for six months, and on admission had urgent dyspnoea, and the symptoms of severe bronchitis. Inspection was made two days after death. The lungs were found studded with tubercles, and congested throughout, in some parts in a state of early consolidation. At the apices there was iron-gray consolidation, and several dilated bronchi running, as large as a goose quill, nearly to the margin of the lung; there were also several vomicae. The peritoneum was healthy. The cæcum rather more free than usual.

In the ileum were several healing ulcers, and strumous deposit in the substance of the mucous membrane. Close to the junction of the ileum with the cæcum was a flattened gland, infiltrated with strumous matter. In the cæcum was a small ulcer.

The appendix cæci appeared full, and on opening it, it was found to be full of thin pus; tracing it towards the cæcum, the canal was found to be almost impervious close to the cæcum, on account of a sudden bend in the appendix and adhesion. Carefully dividing this stricture, an ulcer about a quarter of an inch in diameter was found, which had extended through the coats of the intestine, except, perhaps, the peritoneal, which might have given way on removal; it was doubtful whether that had not actually become perforated before death, and extravasation prevented by slight adhesion with the intestine.

In this case, the symptoms of disease of the chest obscured every other symptom; but it is very probable that if life had been spared a few days, acute peritonitis would have been set up.

CASE XCIX. *Phthisis. Ulceration of larynx—of ileum. Concretion in the appendix.*—Thomas E—, æt. 18, a delicate strumous lad admitted with phthisis on Feb. 27, and died May 4th.

Inspection eighteen hours after death. Lungs contained strumo-pneumonic deposit, old gray induration, and a large vomica at the left apex.

The larynx was deeply ulcerated at the inferior vocal cords.

The ileum contained in its mucous membrane strumous deposit, and a large ulcer at the valve; the appendix contained a waxy concretion, white, lamellated, about one inch long at the extremity of the appendix; the rest filled with mucus.

This concretion appeared to be composed of inspissated mucus.

CASE C. *Pyæmia. Necrosed humerus. Cæcal disease.*—William S—, æt. 72, admitted into the hospital January, 30th, and died February 16th, 1856.

He had received six months before death a compound fracture of the left humerus, and Mr. Birkett had removed a portion of necrosed bone; the wound did not heal, and the patient gradually became increasingly prostrate; nine days before death he had pain in the abdomen.

Inspection was made forty hours after death. The body was much decomposed; the lungs, liver, and kidneys, were too much changed to decide as to the existence of acute disease. There was considerable development of fat; the peritoneum was greasy, and in the right cæcal region several coats of intestine were adherent; on removing them, about a cupful of pus was poured out; this was found to arise from the appendix cæci. The appendix contained several small circular ulcers, and one of these had a pinhole opening into the peritoneal cavity; the whole of its parietes were much thickened, especially at the extremity, which was white and fibrous; the appendix contained pus. The cæcum itself, the ileum, and the rest of the intestines were healthy. There were no tubercles or phthisical disease in the lungs. The right shoulder-joint, the sterno-clavicular articulation, &c., were filled with pus. On the left side was an oblique ununited fracture of the humerus.

It is very unusual to find a patient at seventy two years of age the subject of cæcal disease; neither did it appear to be the direct cause of death; the man died from pyæmia, consequent on necrosed bone. Cases, however, arise of pyæmia being produced by cæcal disease alone; the probability is, that in a poisoned condition of the blood, slight irritation at that part was followed by ulceration, perforation, and subsequent suppuration.

CASE CI. *Perforation of appendix cæci by laminated concretion. Fatal peritonitis.*—John H—, æt. 36, admitted August 9th, and died on the following day.

He was a strong muscular man, by trade a carpenter, who, six days before death, had diarrhœa; this ceased and was followed by constipation. Some months ago he had severe pain in the abdomen, but on admission he was too ill to give much account of himself.

Inspection was made six hours after death. The head was not examined: the

heart and thoracic viscera were healthy, but the diaphragm was much pushed up by the distended abdomen.

Abdomen.—Much enlarged by the flatulent distension of the small intestine, resembling large distended coils of the colon. The whole peritoneum was much injected, and every recess contained collections of thin pus, especially the pelvis. On gradually removing the ileum from the cæcum, a small concretion was found in the peritoneal cavity near the cæcum, and on further inspection a slough was found at the position of the lower part of the cæcum, which contained a second concretion, about the size of a cherry stone. This slough was found to be situated about the centre of the appendix cæci, the extremity of which was united to the cæcum immediately beneath the ileo-cæcal valve. The concretion was white at its centre, composed of laminæ; externally it was brown, and easily crumbled into powder. The intestine itself, cæcum, and ileum, appeared healthy; Peyer's glands very distinct by pigmental deposit; and there were some old adhesions at the lower part of the ileum.

Although the fatal attack commenced suddenly, the patient had some months before had pain in the abdomen; diarrhoea was followed by constipation; the latter the result of the perforation, and consequent peritonitis. The concretion was not analyzed chemically; no nucleus was found in it; and it appeared principally to have been composed of phosphates.

CASE CII. *Ulceration of appendix cæci. Perforation. Fæcal abscess. Secondary perforation of ileum.* (From Museum Records.)—Thomas T—, æt. 24, a florid man, who stated that till his last illness he had enjoyed good health. He was a rope maker by trade, and in destitute circumstances.

One month before admission he had diarrhoea, which several times recurred, and for which he took brandy. The diarrhoea was accompanied with severe pain. One week before admission he walked fourteen miles and then slept in a stable, and four days afterwards was seized with vomiting, then with tenderness of the abdomen, and with constipation.

In that state he was first seen; the pain was principally in the right hypochondriac and lumbar regions; the vomiting was frequent and the pain severe. In three days the pain subsided, the bowels acted freely. He afterwards became prostrate, the abdomen continued tender, and before death slight delirium supervened.

There was general injection of the peritoneum, which was covered with layers of fibrin and bathed with feces. The small intestines were distended; in the ileum was an oval patch of ulceration, at which the peritoneum was perforated at one or two places. There were several ulcers in the lower part of the ileum. In the right iliac fossa was a circumscribed fæcal abscess, formed partly by omentum; the abscess contained the appendix cæci, nearly divided by an ulcer in its middle portion; the whole of the appendix was thickened and granular. (Prep. in the Museum 1832⁷⁵.)

The destitute circumstances in which this patient was placed tended to increase and render his disease fatal. It is probable that after the commencement of the cæcitis, as indicated by the pain, &c., the patient would have recovered with rest and judicious treatment. He was obliged, however, to walk many miles, slept in a stable, and suffered great privation; in this state signs of peritonitis came on; this was probably caused by the ulceration and perforation of the appendix; fæcal abscess followed, and in several weeks death. The perforation in the ileum was, perhaps, secondary; it formed part of the walls of the abscess; and ulceration extended into it from the external to the internal coats. The peritoneal was more extensively destroyed than the mucous coats, so that several valvulæ conniventes are left.

CASE CIII. *Fæcal concretion. Perforated appendix.* (From Museum Records.)—Mrs. L——, æt. 45, a very stout woman, married, and the mother of three children. For several weeks had appeared unwell; the bowels were generally constipated. She was observed to complain of pain in the right iliac region, induced by coughing. On Saturday, 25th August, whilst engaged in washing, she suffered considerable accession of pain. The pain became more general and constant, and was greatly increased on pressure; leeches were applied, and she was bled, without relief; purgatives acted freely, but the stomach became very irritable; the tongue red, clean, and parched. The abdomen became exceedingly distended and tympanitic, and the tenderness general. The principal pain was in the right iliac region. The pulse was weak, but rather quick and sharp. The extremities cold and clammy. The patient was restless but sensible, and she died on the third day.

There was general injection of the peritoneum, which contained offensive pus, and some adhesions in the right iliac region. The appendix was short, and fixed by adhesions; it was distended by an elongated fecal concretion about the size of the little finger, and two thirds of an inch from the mouth of the appendix was a minute ulcerated perforation. Other viscera were healthy, but the whole body much loaded with fat. (Prep. 1881²⁰.)

At the onset of the pain, it was possible that the perforation had not taken place, and there can be no doubt that the injudicious administration of purgatives in this case hastened the fatal result. The cæcum had probably been distended for several weeks, the bowels were constipated, and the pressure of the abdominal muscles during coughing induced the impulsion of feces into the appendix.

CASE CIV. *Concretion in the appendix cæci. Perforation.* (From Museum Records.)—George N——, æt. 20, a young man who had been accustomed to live intemperately, had had for several years occasional severe pain across the abdomen. Two days before admission into Guy's, in October, 1828, he was supposed to have enteritis, and was bled very freely. The pain, which was severe, was situated in the right hypochondriac region, extending to the back and to the pelvis; it was paroxysmal in character, and was increased by pressure and by respiratory movements. The febrile excitement was slight; calomel and opium were administered, and purgatives. He died, apparently from syncope, after being removed from a warm bath.

On inspection, the general peritoneal cavity was found to contain opaque whitish puriform fluid, which escaped from the right side, where was a circumscribed cavity, bounded by the liver and gall-bladder, by the parietes on the outer and posterior aspects, and on the inner side by the ileum and colon; these parts were feebly glued together, and contained about twelve ounces of pus.

About two inches from the mouth of the appendix cæci was a soft brown concretion of the size of a large pea, and immediately beyond this was an ulcerated opening about three-quarters of an inch in length, which very nearly detached the lower third of the appendix. The retained part of the appendix was much thickened, and there was injection of the mucous membrane of the intestine. (Prep. 1881¹⁰.)

This case well illustrates the course of cæcal disease after perforation, and shows the importance of rest, and an opiate rather than purgative mode of treatment. At the time of his admission a fecal abscess existed, the peritonitis had become limited; but this attempt at reparation was entirely defeated by the use of purgatives, and the mechanical disturbance of the abdominal viscera.

CASE CV. *Fæcal concretion in the appendix. Perforation. Peritonitis.* (From the Museum Records.)—Mr. C——, æt. 22, a well-developed man, whose general health had been good. On May 5th, 1829, after excess at table, had much disturbance of the stomach and bowels, but recovered partially in a few days. On the 9th severe pain in the abdomen came on, with vomiting and prostration; he was depleted, and

active purgatives were administered without relief; afterwards calomel and opium; there were delusive symptoms of improvement a short time before death, which took place on the 14th.

On the right side there was a circumscribed cavity bounded by small and large intestine and omentum, which contained about $\frac{3}{4}$ of feculent pus. The appendix cæci was found bound down and distended to at least three times its ordinary size, and contained an indurated concretion of about the size of a chocolate nut, and composed of indurated feces; a small perforation had taken place. Internally the mucous membrane was thickened, congested, and partially ulcerated, and there appeared to be inflammation of the adjoining parts of the ileum and colon. The valvulæ conniventes were abraded.

The concretion in the appendix had probably existed for some time, but did not produce any symptom till the vomiting and diarrhœa were set up. At that time, ulceration appears to have taken place, and on the fourth day perforation and peritonitis occurred, and a fecal abscess was formed. With treatment which we now consider to be adverse, he survived for five days.

CASE CVI. Ulceration of the appendix, with disease of the kidney. (From Museum Records.)—William J—, æt. 36, was admitted into Guy's. He was a thickly set, corpulent man, with dark complexion. Sixteen days before admission he was seized with severe pain in the right iliac region, which, on the following day, extended to the loins. From that time he passed less water than natural, and occasionally vomited; he was bled, warm bath was used and opiates given; he had rigors, and before admission a fit; at that time the intellect was disturbed, no urine was discharged, but a very small quantity of highly albuminous urine was drawn off.

Occasional hiccup, with twitching of the face and grinding of the lower jaw took place. The bowels were freely purged. The mind became clear, but again oppressed, and he had occasional rigors; more urine became secreted, but he had a sense of coldness of the skin. After free purgation he sank.

Adhesions were found existing between the colon and ileum, and the abdominal parietes, and the appendix cæci, with part of the cæcum, were destroyed by ulceration. The ileo-colic valve was also ulcerated. The kidneys were large and flabby.

The adhesions which had taken place in this case had entirely prevented fecal extravasation, and it is probable that the cæcal disease was in an almost passive condition. The principal symptoms doubtless arose from ischuria renalis, which was also the cause of death; but the case is one of much interest, as exemplifying one of the difficulties which might have arisen in the diagnosis. The severe pain in the right iliac fossa, from cæcal disease, might have been attributed to a renal calculus impacted in the ureter.

Many of these cases of perforation occur in early life. In my notes I have cases at the age of twelve, fourteen, nineteen, &c., death generally taking place on the third to the seventh day; but although the leading symptoms are very similar, and well marked, each one has its own minor peculiarities. The detection of foreign substances in the appendix, without any severe irritation having been produced, is by no means uncommon; thus a pin was found with its head downwards, and its point extending into the coats, half surrounded by fibrous membrane. Again, I have observed an iron nail, without injury having resulted from its presence; shot, and very varied substances are sometimes thus lodged. The

presence of feces in the appendix is often the precursor of ulceration and fatal perforation. In the volume of the Guy's Reports for 1856 is a case of much interest, recorded by Dr. Hughes, of strumous peritonitis and perforation of the cæcum coming on in a boy aged 14, after typhoid fever. Seven months after fever, while at work, sudden and severe pain came on in the abdomen, which subsided in a few days, but again returned, continuing for several hours in each attack. When brought to Guy's the pain in the abdomen was general, with tenderness, and there was much febrile excitement. After several weeks the general distension subsided, but a hard, tolerably defined mass was felt in the region of the cæcum. This hardness continued, and he had occasional attacks of severe pain, sometimes with diarrhœa; hectic supervened, the skin became hot, the stomach irritable, and he exceedingly restless, fretful, and distressed; the abdomen moved *en masse*; he sank about ten weeks after admission.

There was slight strumous deposit on the lungs, but the abdomen presented the usual appearance of strumous peritonitis; the disease, however, was most marked in the region of the cæcum, the anterior surface of which was destroyed, and a fecal abscess had resulted; the termination of the ileum was also perforated. Other parts of the small and large intestine were ulcerated.

The ulceration consequent on the typhoid fever in this child appears to have predisposed to slow organic changes of a strumous character in the abdomen.

CASE CVII. *Cancer of the cæcum. Abscess in the groin.*—William J——, æt. 56, by trade a coach trimmer, of very temperate habits, had enjoyed excellent health till he ruptured himself in carrying a heavy weight; he afterwards had an abscess in the right groin for which he kept his bed.

In October, 1855, he experienced pain and sense of heat at the lower part of the abdomen, and then found a swelling about the size of a walnut, which gave him great pain on pressure, or on walking. The swelling enlarged day by day, but became less painful, and night-sweats came on.

On admission he had cachectic appearance; in the right iliac region was a hard swelling extending into the umbilical region; it descended also below Poupart's ligament on the right side; the inferior part was firmer than the upper; the pain was increased by pressure, and in defecation. The respiration was difficult, chest normal, the urine healthy, but there was pain after passing it. The appetite tolerably good.

He was ordered castor oil, four leeches were applied to the tumour, and Dover's powder with gray powder were given night and morning.

Free action on the bowels took place, which lessened the abdominal tumour, in fact it had almost disappeared.

The tumour in the thigh remained hard and tender. It became red, more distended, and crepitant.

Severe pain in the thigh came on, and a free incision was made into the abscess; about a pint of fecal matter was discharged with gas.

This fecal discharge with pus continued very abundantly; the edges of the wound sloughed, and a second opening formed near the crest of the ileum. The patient gradually became prostrate, and for more than a month before his death he had very troublesome diarrhœa. He died about three months after admission.

Inspection on same day.

Abdomen. The general peritoneal surface was healthy; the small intestines collapsed. There was an old inguinal sac on the right side quite free and empty. Several coils of small intestine, the lowest parts of the ileum, were firmly adherent

on the inner side of the cæcum, at the brim of the pelvis, and the cæcum itself formed the anterior surface of a firm tumour. On carefully removing the cæcum and intestine, it was found that the posterior wall of the cæcum was destroyed by carcinomatous ulceration, and offensive fecal matter was poured out beneath the iliac fascia, extending downwards to the opening on the thigh. There was also an irregular nodulated growth, extending from the mucous membrane of the cæcum anteriorly, attached near the valve, and surrounding the intestine; the edges exceedingly vascular, but not flocculent. The section of the thicker portion near the ileum presented yellowish white medullary structure, and consisted of an aggregation of large nuclei, evidently medullary cancer; near the margin beautiful capillaries were observed distended with blood. At the posterior part some of the cellular tissue was infiltrated. The coil of ileum which was adherent to the cæcum had an irregularly transverse opening into it, and was much injected. The remaining part of the intestinal canal was healthy, so also the mesenteric and lumbar glands.

The liver was pale, somewhat fatty. Kidneys, bladder, &c., healthy; so also the thoracic viscera.

The commencement of this was different from ordinary cæcal disease. There was a small painful tumour which had more resemblance to cancerous growth, or diseased gland, than cæcal disease of a simple inflammatory character; but in other cases which I have witnessed or read of, ulceration commencing at the posterior surface of the cæcum, and leading to extravasation into the cellular tissue of the iliac fossa, the disease was evidently allied to cancer in one or other form; and I believe that nearly all such cases will be found to be of that character.

CASE CVIII. *Carcinoma of cæcum, omentum, and lumbar glands. Fecal Abscess.*—James P—, æt. 21, was admitted into Guy's under the care of one of my colleagues.

Three months before admission he discovered a small swelling in the right iliac region; when first noticed it was only the size of a marble, but gradually increased so as to fill the whole of that region.

On admission he was pale, nervously agitated, and had a strumous aspect; there was considerable febrile excitement, and he suffered from pain in the right iliac region, where a hard tumour could be felt extending into the lumbar region. At the left axilla was a small dark coloured tumour, apparently cancerous; he had no difficulty in passing his motions, and his urine was healthy. The pain in the abdomen became more severe, and he died in a few weeks after admission.

Inspection.—The lungs were emphysematous, the bronchial glands not enlarged. In the abdomen, the peritoneum was acutely inflamed; the cæcum was perforated, so also the termination of the ileum, which opened into a fecal abscess at that part. The walls of the abscess were infiltrated with medullary cancer. The omentum was spread in front of the intestine and was adherent; it formed part of the walls of the abscess; the lumbar glands were also infiltrated. The liver and kidneys were healthy.

This was apparently an instance of carcinomatous disease, but its precise origin or point of development doubtful; whether it began in the lumbar glands or in the cæcum, probably the latter. The detection of the gland similarly diseased in the axilla, very much assisted in forming a correct diagnosis.

CASE CIX. *Appendix in inguinal canal.*—James C—, æt. 16; the testes had not descended, and the appendix was adherent in the inguinal canal; the small intestine was fixed in the pelvis. The symptoms of hernia came on, and an explorative operation was performed. Peritonitis supervened, and after death purulent effusion was found in the abdominal cavity.

CASE CX. *Appendix cæci adherent with omentum at the internal abdominal ring. Supra-renal capsular disease.*—Henry T. M——, æt. 38, was admitted into Guy's Hospital, March, 1857. He was a man of a sallow, very anemiated appearance, and had been losing strength for twelve months. He was exceedingly prostrate, unwilling to be disturbed or spoken to, and, with the exception of occasional vomiting at the time of admission, no symptoms of disease could be detected. He had no cough, the abdomen was collapsed, and he appeared to die from rapid exhaustion. On inspection miliary tubercles were found in the lungs, and some iron-gray deposit. The supra-renal capsules were twice their natural size, and infiltrated with strumous product, in a degenerating condition. The intestines were contracted and healthy throughout; one of the mesenteric glands was enlarged slightly, but there was no evident pressure on the thoracic duct. The omentum was firmly adherent in the right inguinal canal, and at the orifice the appendix was also inseparably united. It contained some semi-purulent mucus, and was slightly dilated at its extremity. This condition of the appendix was not known to have produced any symptom recognizable during life.

CHAPTER IX.

ON DIARRHŒA.

DIARRHŒA consists in the abnormal frequency of the evacuation of the bowels, as defined by Cullen, "Dejectio frequens; morbus non contagiosa; pyrexia nulla primaria:" and arises generally from an irritated condition of the large intestine.

It manifests itself in various forms, some of which have received distinctive appellations, as *diarrhœa crapulosa*, *serosa*, *mucosa* or *catarrhalis*, *biliosa*, and *dysenterica*.

Diarrhœa crapulosa is that in which there is unnatural fluidity, or excess of fecal excretion, in which the evacuations are healthy in character, but in excessive frequency or fluidity; in some cases very large quantities are discharged without any discomfort, but on the contrary, with relief to the patient. This diarrhœa should not be checked; it is a natural discharge; but it is more frequent as the sequence of irritating or undigested food; either that too great a quantity has been taken, and a portion of it has passed into the intestine crude and partially dissolved; or that the character of the food itself has been such that the solvent power of the gastric juice has no effect upon it, and it constitutes a mass unacted upon, and everywhere more or less irritating: it may be an excess of vegetable diet, of salads, or fruit. Again, even supposing that what has been taken is in every respect suitable, active mental or bodily exercise immediately afterwards may interfere with the proper solution of it, and lead to its too hasty passage into the duodenum.

Where the alimentary canal becomes in this way loaded with undissolved ingesta, pain, arising from irregular peristaltic action and distension, often ensues, and is of a griping and twisting character. The abdomen is full; the skin and complexion sallow; the tongue furred; the pulse compressible; the head frequently affected with pain; the sleep disturbed; the bowels act frequently and irregularly, and the motions present undigested substances, with feces sometimes fluid or with firm scybala. Considerable soreness is at times experienced in the course of the large intestine, and distressing tenesmus from the irritation of the mucous membrane of the rectum.

In other cases the irritation thus manifesting itself in the intestine extends to the stomach, and vomiting is associated with diarrhœa,

giving rise to English cholera when sudden and severe in its character.

In lientery the food is passed almost unacted upon, either by the gastric or intestinal secretions, and is often discharged in a very short time after having been taken; this condition arises from an irritable or inflammatory state of the whole canal, with disordered secretions; it is not unfrequent in children after protracted diarrhœa, or gastro-enteritis; and in not a few cases leads to fatal termination. It is of common occurrence among the out patients of large hospitals.

What has been called *bilious diarrhœa* is also a form of disease produced by irritative substances being poured into the intestine; not however from without, but from the liver, and possibly other glands.

The secretion of the liver is either excessive in quantity, or irritating in quality. The contents of the canal are hurried onward, and there are frequent dejections of loose bilious evacuations. The causes are various, and sometimes the disorder of the liver is really secondary to an irritated condition of the intestine itself, caused by excess or stimulants, especially ardent spirits. Exposure to cold and wet sometimes induces disease in this manner, especially in the autumnal season of the year. The symptoms of this state are somewhat similar to those previously mentioned; but there is frequently less pain, unless the disease become aggravated and pass into dysenteric diarrhœa, when the tongue becomes furred, the complexion sallow, there is febrile excitement, pain in the abdomen, or in the hypochondriac region. This form of diarrhœa is sometimes epidemic, attacking considerable numbers exposed to similar exciting causes. Where disease of this kind is severe, with colic or spasmodic pain in the abdomen or legs, and especially with vomiting, it constitutes English cholera, and often leads to great prostration of strength.

There is, also, diarrhœa arising from the inhalation of noxious effluvia, but it is closely allied to that just described; the fumes of sulphuretted hydrogen gas are absorbed by the lungs, and through their minute capillaries enter the blood; it is circulated, and acts as a poisonous agent on that vital fluid, if concentrated, rapidly fatal; if less concentrated, producing headache, and very frequently diarrhœa. It appears, that not only are the secretions of the liver and alimentary canal changed, but that, in this way, the blood rids itself of the poison. So rapid is this agent in its action, that to be present for a short time, even a quarter of an hour, in a dissecting room, will, in some, produce distressing diarrhœa.

Will disease of the small intestine alone produce diarrhœa?

In typhoid fever, and in phthisis, ulceration of the small intestine is frequently found to be accompanied with it; of this we shall have further to speak: in some cases it is true that the large intestine is involved, but in others, where the diarrhœa has been severe, such

has not been the case. The continuity of structure, and the irritating secreta, the changed and probably accelerated peristaltic action of the small intestine, all tend to produce diarrhœa.

Catarrhal and *mucous diarrhœa* arise from the mucous membrane of the *large* intestine especially, being in a state of slight inflammatory disease, closely allied to ordinary coryza; the secretion is, perhaps, at first checked, but afterwards greatly increased, and leads to a watery mucous feculent discharge (mixed with the ordinary feces, rendered fluid by this unusual secretion from the whole of the mucous membrane); this state may be continued for several days, or even for a longer period; the motions loose, and somewhat watery, and if the rectum be affected considerable tenesmus is produced; the pain and febrile excitement are slight, but the strength is reduced, and the patient is unequal to his usual duties; the tongue is clean, the pulse compressible; it sometimes happens that the bladder sympathizes in this irritation, and that frequent desire to pass urine is induced; and in children irritation also, or muco-purulent secretion from the vulva. The evacuations often contain a considerable quantity of mucus; this is especially manifested where irritation occurs very low down in the rectum, or is set up by hæmorrhoids; the mucus will pass, sometimes, both before and after the defection.

This catarrhal diarrhœa passes, not unfrequently, into a chronic state, the more severe diarrhœa ceases, but still the bowels do not act in their normal manner; constipation often ensues, and afterwards a fresh looseness of the bowels, and this, oftentimes repeated, or the more solid motions are followed by a discharge of mucus coating the feces, or passed in considerable quantity after the evacuation. I have observed this condition following severe disease of the intestines, of a dysenteric character, and sometimes associated, apparently, with a state of chronic congestion of the liver.

In infants, this state closely resembles gastro-enteritis, or is, perhaps, rather identical with it, but differing in degree, as a greater or less part of the alimentary canal is diseased; in them the whole tract sometimes becomes rapidly affected, and great, if not fatal prostration, rapidly ensues. (*See Muco-Enteritis.*)

It is in very young or aged subjects that catarrhal diarrhœa, or catarrhal inflammation of the large intestines, leads to more serious disease, as well as those in whom chronic, or more exhausting disease has existed.

There are several *pathological* conditions observed in these cases; but in many, where severe diarrhœa has existed and led to fatal results, the appearance of the mucous membrane has been normal, its congestion has entirely disappeared, and a thin mucus is found upon the membrane; or vivid injection is presented in more or less isolated patches.

Secondly, where the diarrhœa has been chronic, the mucous membrane is not unfrequently covered by a thick layer of mucus,

and may present a gray colour. I have frequently examined membranes thus changed (as before described: *see* Duodenum and Cæcum), and have observed that the gray colour arose from minute particles of dark pigmental matter deposited in the substance of the mucous membrane. The continued congestion of the membrane probably gives rise to effusion of colouring matter from the blood, changed hæmatine.

In the large intestine, this pigmental deposit is found in minute circles around the follicles, the mucous membrane itself becomes thickened; and also the connecting cellular tissue.

A third condition is observed after long continued diarrhœa of this kind, namely, that of minute ulceration, probably follicular, extending nearly the whole length of the colon. (Such a preparation is found in the museum of Guy's.) These ulcerations are about one-sixteenth of an inch in diameter, and presenting a minute black zone around each of them.

In *Choleraic Diarrhœa* a thin, very abundant watery mucus is discharged from the alimentary canal; it is often alkaline in character, and consists of nuclei and epithelial cells in various degrees of development. After death the membrane is found to be entire, and pale or sodden, the solitary and Peyer's glands enlarged. In many cases of uncomplicated cholera which I have examined, no further morbid appearance was presented.

Another kind of diarrhœa is that which has been correctly called *Serous*. It is frequently observed in albuminuria. A dropsical condition of the mucous membrane is induced, and the serous exudation from the overcharged capillaries leads to watery discharge into the colon, and diarrhœa.

It is precisely analogous to the œdema of the lungs, and anasarca of the cellular tissue in that disease. So frequently is this the case, that it may almost be regarded as a symptom of the disease, and when moderate is beneficial in its results. It is the action we often seek to produce artificially by the jalap powder, or elaterium and bitartrate of potash, forming the powerful hydragogue administered in some of these cases. The fluid evacuations contain urea, which has also been found in the mucus discharged from the lungs.

I observed in one instance that the motions in diarrhœa were quite in a state of fermentation, watery, frothy, and only containing fluid fecal matter. The case was one of phthisis, and probably of some ulceration of the intestine. On admission into Guy's, the evacuations consisted of mucus in long shreds and casts; they were composed of columnar epithelium and nuclei; this condition, after a few weeks, subsided under the use of cusparia, sulphuric acid, and opium, with occasional starch injections; but was followed by frothy, yeast-like evacuations, accompanied by very severe pain in the course of the colon, especially the transverse and ascending colon. The symptoms of disease of the chest became less marked, the cough less trying, but the patient very prostrate, the tongue becoming

furred and brown, the pulse very compressible. For this state I used injections of charcoal,¹ Zij, to about a pint of thin barley water, and with great relief; the character of the evacuations improved, and in a short time subsided, becoming naturally fecal, the pain very much less, and the strength increased. I afterwards gave her several grains of myrrh, twice or three times a day, with manifest improvement, till she left the hospital several months later.

Another class, which can scarcely be placed among the cases previously mentioned, are those arising from fright, or excessive mental agitation, or from want of food, and in exhausting disease; the latter constituting what is sometimes called "colliquative diarrhœa."

In fright the capillaries of the face become blanched, and the blood leaves the whole of the surface; the cavities of the heart are increasingly distended, hence the discomfort there experienced, and the mucous membrane of the intestine is probably also gorged; therefore the discharge from the mucous membrane is to a certain extent beneficial in relieving internal congestion. Why such a course of action should follow mental agitation cannot be explained. We know that the functions of the sympathetic nerve are in most close connection with those of animal life.

In scurvy, purpura, starvation, &c., the altered character of the blood, and its inadequate capabilities of sustaining the changes of nutrition, lead to the effusion of serum, or blood, into the mucous membrane, or the canal itself, corresponding to the effusion into the skin. In some fatal cases of purpura, the whole of the mucous membrane of the alimentary canal is studded with spots of ecchymosis. An interesting case of this kind lately occurred at Guy's, in a young man who had been starved to death.

Discharge of blood, or melæna.—Obstruction of the portal circulation in a partial degree, either from pulmonary, cardiac or hepatic disease, leads to great engorgement of the mucous membrane of the whole alimentary canal, and may cause hemorrhage from it. In examining the mucous membrane in these cases, it is very common to find points of ecchymosis, and the vessels of the membrane much distended. With a low magnifying power we find the capillaries beautifully injected, with extravasated blood between them; still, however, restrained by the basement or bounding membrane: if the rupture of this membrane occur blood is extravasated. Thus the discharge of blood may be a symptom of various diseases, the same course of action taking place in the canal as we observe at the termination of the rectum, in the discharge of blood from engorged hæmorrhoidal veins.

Ulceration is an equally frequent cause of hemorrhage, and takes place in any part of the canal, as in the stomach or duodenum; in

¹ Dr. Theophilus Thompson, in his lectures on consumption, speaks of the use of charcoal in the diarrhœa of phthisis; but apparently without having personally used it.

the small intestine in fever or phthisis; in the colon in dysentery, &c.

The blood does not always present the same appearance; if it arise from hæmorrhoidal vessels the blood will be florid, and precede or follow the dejection; if higher in the canal it is incorporated with the feces; and where it has traversed a considerable portion of the canal, becomes discoloured by the secretions from the membrane. This is the case, to some extent, when the blood is poured into the cæcum, but is especially so whenever it has been extravasated into the stomach; the acids of the gastric juice act upon the blood, it becomes black, and is discharged from the intestine in a pitchy fluid, constituting true melæna.

The *symptoms* have, perhaps, been sufficiently described in mentioning the forms of diarrhœa; they vary according to its cause. In the simplest form there is no pain or constitutional disturbance; in more aggravated cases there may be severe colic, and febrile excitement; generally, unless there be hepatic disturbance and derangement of the whole mucous tract, the tongue is clean. The pulse is compressible, because the nerve of organic life sympathizes. The consequent prostration is often very alarming, especially in infants and aged persons, and in some cases leads to a fatal result.

It is important carefully to mark the character of the evacuations; the admixture of undigested substances, the abundance of colouring matter, of bile, the excess of mucus, and presence of scybala, or of blood, or the thin watery discharge from an œdematous mucous membrane. These characters guide us in forming a correct diagnosis.

The *causes* of diarrhœa have been partially referred to. The most common cause of ordinary diarrhœa is exposure to cold or wet; standing in damp places; allowing the legs and loins to become damped or chilled; sitting down upon the ground, or falling asleep in the open air; injudicious bathing; the habit of leaving off flannel garments in hot weather, by which perspiration more rapidly evaporates, and the blood is driven from the surface towards the internal organs.

2d. Improper or indigestible food, unripe fruit, or an *excess* of uncooked fruit; salads, pastries, and much that modern cookery produces, especially where excess in quantity is combined with injurious quality.

A change of diet, a mixture of vegetable food, ripe fruits, cooked or uncooked, are both wholesome and beneficial; and persons in ordinary health do well thus to modify their diet according to the dictates of the palate, where it is guided by reason and prudence.

In infants a fertile source of diarrhœa, often passing into severe gastro-enteritis, is the administration of unsuitable food, which is greatly increased by exposure to cold. In hospital and dispensary practice, this is observed to a fearful extent; at seven or eight

months, even while the infant is, in a great measure, nourished by the breast of the mother, meat, raw vegetables, and fruits, sweets, almost *ad libitum*, are given, and a few months later we often find, that before the child has the power of mastication, the mother gives the food of which she herself partakes, sometimes joining malt liquors or spirits. The consequences of this are such as might be anticipated; the food passes onwards, undigested, and severe gastro-enteritis is induced; this condition is aggravated by a want of cleanliness (not having repeated changes of all the linen about the child), by exposure to night air and dampness. The mortality in London from these causes is exceedingly great. In other infants the food, although in itself proper, is unsuited to the condition then existing, and perpetuates diarrhœa; or it may be, that the milk of the mother disagrees with the child, from the impairment of her health. In such subjects we occasionally find, that an alteration in the secretion, or character of the gastric juice, leads to coagulation of the milk, and severe diarrhœa, &c.; the stools containing portions of curdled, undigested milk, oil, and casein.

3d. Diarrhœa is set up by exhaustion, either from want of food, starvation, and its attendants of misery, or as the consequence of disease. This form of diarrhœa is sometimes observed in women who have nursed their infants too long. Enfeebled by bearing children rapidly, their strength is additionally taxed by nursing for twelve, fifteen, or eighteen months without proper nourishment or invigorating air. The whole mucous membrane is affected; the nerve of organic life shows its ebbing powers; the blanched cheek, the dilated pupil, the desponding countenance, and impulses of a mind verging on insanity, are symptomatic of this condition. There is intense pain in the head, the heart is enfeebled, the pulse sharp, and sometimes irregular; there is distressing sensation of exhaustion at the scrobiculus cordis, and with this a very slight irregularity of food will set up diarrhœa and vomiting. Allied to this, is the diarrhœa from depraved condition of the blood, as in purpura, scurvy, or after excessive water drinking.

4th. *Epidemic causes*.—At some seasons of the year, in our own climate, during the spring and autumn months, diarrhœas of varying severity are set up, and appear to arise from the condition of the atmosphere, perhaps from germs of vegetable or animal growth.

5th. *Endemic causes* are more numerous, and with them may be classed the diarrhœa arising from offensive drains, from decaying animal and vegetable matters. Causes of this kind operate with greater severity upon the young and enfeebled, upon the strumous and ill-nourished. Many infants are thus affected with diarrhœa from these impurities, or they may lead to more severe general gastro-enteritis. Dr. Snow has shown that the impure water supply in several districts of London, containing, as he states, the refuse of sewers and closets, led to severe diarrhœa, if not, as he believes, to cholera.

6th. *Excessive secretion* of irritating bile from the liver, or from other glands of the intestine, as after intemperance in alcoholic liquors, &c.

7th. Strumous disease of the mucous membrane of the intestine or the mesenteric glands.

8th. Œdema of the mucous membrane, or long continued congestion, as in Bright's disease.

9th. Mental agitation or fright.

10th. Ulceration of the small or large intestine, or, by cancerous disease.

Prognosis.—Diarrhœa is never altogether free from danger in aged persons, or in very young children; but the prognosis differs according to its cause and character. If associated with chronic disease, or an enfeebled condition of the system, it is often the immediate precursor of death; but when the cause can be removed, and the subject is young, however severe the case may be, we should encourage the prospect of recovery. Many of this class which appeared quite *in extremis*, have gradually and almost miraculously recovered.

The prognosis is unfavourable, where diarrhœa has been long continued and very severe in its character; in some of these cases scarcely any treatment appears to have any effect, and the patient gradually sinks into a typhoid condition.

It may appear unnecessary to say anything in reference to the *diagnosis* of diarrhœa; it is well, always, if possible, to ascertain personally the character of the evacuations; but in some there may be apparent diarrhœa, without the reality; I have seen starch enemata used, where a patient was greatly exhausted, or in spinal disease, because, it was said, the bowels were purged, and on inspection, found the reverse to be the case; the sphincter having lost its power to contract, involuntary defecation had taken place. Or again, a single loose motion may constitute diarrhœa, and require immediate attention. The character rather than the quantity should be our guide.

Treatment.—The primary object must be to ascertain the character of the diarrhœa, and to remove, if possible, its cause.

1. If food be improper, to change it, and administer such as shall be of the least irritating kind.

2. If the air be impure, to remove to a healthy atmosphere, where it is possible.

3. If secretions be disordered, to try and restore them.

4. To counteract the diarrhœa by various astringents and sedatives.

1. *Warmth.*—Warm bath, or warmth to the feet, flannel to the abdominal parietes, &c., assist in checking many of the simpler forms, and in diminishing those arising from chronic disease. This may be attained by the application of a hot fomentation, or poultice to the abdomen, or by such rubefacients as will tend to counteract

the tendency of the blood to leave the surface—a mustard poultice, or turpentine embrocation.

2. *Food*.—In diarrhœa, the least irritating and most easily digestible kinds of nourishment are advisable. Many of the forms of amylaceous aliment, arrowroot, sago, are of this kind, and may be given made with milk. In themselves soothing applications to irritated mucous membranes, they serve as food, and have otherwise a beneficial influence. Milk, rice, soaked bread or toast, lightly-boiled puddings of flour and eggs, &c., may be taken with advantage.

The avoidance of stimulants, of rich and greasy food, highly seasoned dishes, vegetables, especially uncooked, fruits, &c., is essential; it is well in many cases to abstain for a short time from animal food altogether. That which is least irritating is chicken, and some forms of fish; then mutton and beef; but much depends on the mode in which these viands are dressed. When dried, salted, or cold, they require a much longer period for their digestion. Beef-tea sometimes appears to increase diarrhœa, when veal or mutton broth can be taken with benefit.

Many cases of diarrhœa will be cured by this attention to warmth and diet, but other means often promote the comfort and promote the restoration to health.

If the large intestine, and especially the rectum, be affected, much benefit is derived from *injections* or *enemata*. These are of various characters—simple starch, thin gruel, or barley-water; and to these we may add tincture of opium, or bichloride of soda. Or the enemata may be more astringent, quassia with tragacanth, or a very dilute solution of nitrate of silver.

To correct secretions.—The alkalis are of very great service in this as well as in diminishing inflammatory congestion, which may be in many cases the cause of their abnormal character. Solution of potash, lime-water, chalk, some salines, as chlorate of potash and bismuth, act in this manner.

Where the hepatic secretions are disordered, as shown by furred tongue, pale evacuations, the moderate use of mercurials is of value—hydrargyrum cum cretâ, or calomel, combined with Dover's powder, soda or opium; but we should strongly urge that these remedies be very carefully administered, because in many forms of diarrhœa mercurials tend greatly to aggravate the disease. It is only when a foul tongue, and deficient hepatic secretions are found, that we would recommend their use.

Demulcents.—These act by directly sheathing the mucous membrane; the most important are those mentioned as food, but others are of considerable utility, as acacia, tragacanth, linseed, liquorice, glycerine, &c.

Castor oil, linseed oil.—These are of great value, where improper food, retained secretions, or scybala irritate the alimentary canal. They are combined with great advantage with the compound tincture of rhubarb, and sometimes with a small dose of opium, *mv*, or

x. These remedies are of most service in some forms of dysenteric diarrhœa, where scybala irritate the mucous membrane.

Ipecacuanha is a remedy which acts, apparently, on all the mucous membranes, and is as valuable in disease of the alimentary as of the respiratory mucous membrane. *Ipecacuanha* not only increases the quantity of mucus from the membrane, but mitigates inflammatory congestion. It is of great service in the dysenteric diarrhœa of adults, and equally so in the diarrhœa of infants. In the former, Dover's powder is a valuable form of administration, or it may be combined with astringents, as in the Decoctum *krameria* compositum of the Guy's Pharmacopœia, or the Mistura hæmatoxyli composita.

Astringents and desiccants.—These may be divided into several classes. The *saline*, as chalk; the *vegetable*, as *krameria*, kino, catechu, logwood, Indian bael, cusparia, opium; *metallic*, as sulphate of copper, acetate of lead, nitrate of silver, bismuth, &c.

Opium acts as an astringent, but it also acts as a narcotic; it diminishes the secretion from the mucous membrane, and relieves the pain of colic often present, and caused by irregular peristaltic action of the intestines. It is of great value in diarrhœa, and may be combined with other remedies in the simple forms—with chalk and *ipecacuanha*. Where more chronic, and passing into dysentery, with the more active vegetable astringents, catechu, *krameria*, and logwood. The preparations of these remedies in the Guy's Pharmacopœia are very valuable ones.¹

The metallic astringents are combined in a similar manner with opium or *ipecacuanha*, but are more frequently used in chronic dysentery, or strumous ulceration of the intestine in phthisis, than in simple diarrhœa.

Mineral acids.—Much has been said and written in reference to the use of dilute sulphuric acid in diarrhœa;² and its use has certainly been attended with benefit, although not to the extent we were led to suppose. Both dilute sulphuric acid, and dilute nitric acid, are also of value after the more severe symptoms have passed off; they act at first possibly by checking chemical and fermentative changes, and afterwards as tonics to the relaxed mucous membrane. Combined with slightly astringent and mucilaginous tonics, they are of great service in some cases—as with cusparia or simaruba.

Where there is much pain, we may associate narcotics with other remedies before mentioned. Chloric ether, also, sometimes affords great relief, administered with mucilaginous remedies; so also the tincture of henbane; in others, simple carminative medicines are sufficient to relieve the pain—as ginger, cardamoms, &c.; especially where the diarrhœa is associated with flatulent colic.

¹ Decoctum *krameria* compositum: *Krameria* rad. ℥ix, aquæ ferventis ℥xviiij; decoque ad ℥xv et cola; deinde adde vini *ipecacuanhæ* ℥vj, tinct. catechu ℥vj, syrupi ℥iss.

² Dr. Fuller, On the Use of Sulphuric Acid in Diarrhœa; *Medical Times and Gazette*.

Leeches.—The application of leeches to the anus is a remedy which greatly relieves inflammatory congestion of the mucous membrane of the large intestine, but it is one which we should scarcely recommend, unless the disease assume a more severe or dysenteric character.

Suppositories, composed of the compound soap pill, with opium, or of henbane, are often of great service when there is distressing tenesmus which disturbs the rest of the patient, or where it is undesirable to administer an opiate by the mouth, and inconvenient to use an enema.

In chronic mucous discharge from the bowels, we must first seek to rectify the disease of the liver, if such exist, by mild alteratives; by taraxacum, and by nitro-muriatic acid. These remedies, also, assist in relieving the chronic congestion or inflammation of the intestine, and are more effective than astringents. It is well, however, to be assured that no polypoid growth, or disease in the rectum or sigmoid flexure, is setting up this disease.

If astringents be required, the oxide of silver, or nitrate; sulphate of copper, with opium; or vegetable astringents just mentioned, may be used.

The injection of nitrate of silver (gr. x—xv to Oj¹), of infusion of quassia, decoction of oak bark, and poppy-heads, are sometimes used with advantage.

CASE CXI.—*Inanition. Diarrhœa*.—John M——, æt. 26, admitted into Guy's December 16, 1856, and died December 21.

He was a sailor, and said that he had had dysentery, but this was not satisfactorily ascertained on account of his prostrate condition.

It appeared that he had been on board an American vessel from China to Liverpool, and arrived at the latter place on December 6th; he then came up to London. He informed the nurse that there had been a mutiny on board, and that he had been put in irons in the hold. He was in the most emaciated state, the voice scarcely perceptible; the pulse exceedingly compressible; the tongue and mouth presenting yellowish white aphthous patches—he had no vomiting, the stools escaped from him, and were white and very offensive; the respiration easy; mind perfectly conscious. Milk was ordered.

The following day he was better, but sank on the third day after admission; sensible till nearly the last.

Inspection, December 22, 1856. There were ecchymoses on both thighs; old cicatrices on the wrist and leg. Brain rather more fluid than normal. Lungs collapsed and healthy. Heart small. Liver healthy. Gall-bladder not distended. Spleen and kidneys healthy. The stomach, gastric solution at the cardiac portion. Small intestine healthy. Large intestine throughout gray, and filled with dry, white feces; at the root of the mesentery were several white strumous masses in the glands, but it could not be found that the thoracic duct was obstructed. Bladder distended with thin watery urine.

This case presents us with a well marked instance of a man dying from the effect of starvation. The diarrhœa was probably the result of want of nourishment, good air, light, &c.; so that the supply and conditions necessary for reparation having been cut off, the whole body wasted, and the spark of life gradually expired.

¹ Trousseau.

CHAPTER X.

ON COLITIS AND DYSENTERY.

Numerous authors, Sydenham, Annesley, Parkes, Balinghall, and Morehead, have described this disease in the terrible forms manifested in tropical climates, or in military campaigns; and as formerly seen, even amongst ourselves. In our own country, however, it has very much diminished in severity and in frequency, so that it is rare to find it in its acute character, unless contracted in foreign climes, and then brought to our shores. True dysentery occurs more commonly than some of very great experience amongst us will admit; sometimes alone, and quickly fatal; or in association with general inflammatory condition of other mucous membranes; or lastly, as suddenly terminating, or aggravating varied forms of chronic disease.

Particular localities and periods of the year cause the manifestation of this disease, or its complication with others in a very marked degree. This fact is shown by the observations of Dr. Latham and Dr. Baly at the Millbank prison, and is probably the reason of its more frequent occurrence in the hospitals in Southwark, than elsewhere in London. The complication of dysentery with other diseases is a very important consideration in their prognosis and treatment: thus, incipient phthisis may become altogether hopeless, and in a very short time fatal, not from the severity of the pulmonary affection, nor from strumous disease of the intestines, but from acute inflammation of the mucous membrane of the colon.

Abercrombie defined diarrhœa as purging, arising from irritating substances in the canal, or from secretions poured into it; and dysentery, as acute inflammation originating in the mucous membrane of the large intestine. This distinction is probably, to a considerable extent, correct; but some forms of disease usually considered as diarrhœa, arise from catarrhal inflammation of the colon and small intestine, and after death may present scarcely any trace of abnormal change. Dysentery is generally limited to the colon, and when severe the inflammation rapidly passes into ulceration or sloughing, unless from its extent, or the previous condition of the patient, it prove fatal at an anterior stage.

Several of the fatal cases recorded in this chapter terminated before extensive ulceration had taken place. Dr. Lyon, in his Crimean report, has divided dysentery into the exudative and the follicular.

The former is, however, probably the earlier stage, or that preceding ulceration and sloughing. Those which have come under my own observation may be divided, practically, into three classes:—

1. Those in which the inflammation of the colon was the primary disease; where it was very extensive, and sometimes, rapidly fatal.

2. Those associated with inflammation of other membranes or organs, arising at the same time, and produced apparently by a general cause, as with bronchitis, laryngitis, or pneumonia; in some instances, closely allied to pyæmia.

3. Those cases in which inflammation of the colon has hastened the fatal termination of other more chronic disease.

Pathology.—The dysenteric process is well described by Rokitsky, who divides it into four stages, and considers it to consist in inflammation of the mucous membrane of the colon, terminating in severe cases in sphacelus. Dr. Parkes believes that, in true dysentery, ulceration is always present, and attaches great importance to the affection of the glands; whilst Dr. Baly describes the process as sloughing, rather than ulceration. Are we then to look upon inflammation of the colon, in which there is no destruction of the mucous membrane, as true dysentery? Most will acknowledge, that death may take place prior to the ulceration or sloughing, although we rarely, if ever, find the mucous membrane entire throughout; it is probable that the diseased condition is closely allied to that of the pharynx in diphtherite; and that in severe cases, the membrane rapidly sloughs, without antecedent ulceration.

In the earliest stage of dysentery, the mucous membrane becomes injected, oedematous and thickened; the mucus is scanty, and the feces become adherent; this condition may be universal in the colon, or limited to the rectum, the sigmoid flexure, or the cæcum.

2. The secretion from the membrane becomes further changed, and a thin exudation, consisting of epithelium with a considerable quantity of granular amorphous matter, coats the intestine. It is found in patches or lines, or spread, generally, upon the surface. It has been described as dipping into the follicles; this I have myself observed, and the exudation may be seen closely incorporated with the surface of the membrane, so that it can only be separated by considerable violence. The exudation is of a greenish yellow colour, but varies somewhat according to the character of the feces. On scraping off the effusion from the surface, the membrane beneath is found intensely congested, and often superficially ulcerated; or there may be merely minute circular patches of ulceration, and portions of the false membrane adhering at that part. This tendency to ulcerate, or to slough, resembles the diphtheritic membrane effused in the pharynx and nares. The character of the false membrane is sometimes more fibrinous. The muscular coat appears thickened, probably, because contracted; and the submucous cellular tissue is often whitish and distinct from inflammatory oedema. Dr. Baly, whilst describing this epithelial degeneration, states, that in most

cases these minute adherent coverings on the surface of superficial erosions, or small ulcers, consist of thin sloughs of the mucous membrane. He believes that, in all cases, the destruction of the mucous membrane consists in a process of mortification and sloughing, and not by simple ulceration; and that the disease commences in the solitary glands of the intestines. Other parts, however, beside the solitary glands, are found to be diseased; but whether primarily or by extension, is matter of opinion. Many instances of *diarrhœa* are observed, in which, after death, the solitary glands were found enlarged, or minute points of ulceration presented; the whole colon may be studded over with minute ulcers, arising apparently in the glands, as is well shown in a specimen in the Guy's Museum. Dr. Baly would probably consider these to be instances of the dysenteric process in its mildest form, and that in other instances, previously alluded to, more acute changes had spread from the glands to the general surface of the membrane.

Dr. Morehead has less frequently observed diphtherite in dysentery, and believes that the mucous follicles are more frequently affected than the solitary glands.¹

In the third stage, we find ulceration, sometimes merely as minute circular ulcers, as before described; more frequently the ulceration is much more extensive, often oval in form, and placed in the transverse axis of the intestine; the edges raised and much injected, the margins irregular and undermined, and the floor formed by the cellular or muscular coats. These ulcerations gradually extend so as to coalesce, till at last nearly the whole of the mucous surface is destroyed, except here and there prominent isolated portions, which become intensely congested, and resemble polypoid growths. In severe cases the whole colon, from the cæcum to the rectum, is in this condition, or greater spaces intervene, or ulcers are only found in the rectum, sigmoid flexure, or cæcum. It sometimes happens, that the ulceration extends through the muscular and the peritoneal coat, leading to fatal peritonitis from perforation, but this is a rare occurrence; or, the coats of the intestine become sinuous abscesses, so that on dividing a prominent portion of mucous membrane, between two ulcers, several drachms of pus escape. This extensive suppuration is very different from the small local collections of pus which sometimes form in the substance of the mucous membrane after follicular or glandular inflammation, where small eminences about half an inch in diameter are observed, covered by thin layers of mucous membrane. This is a less general and less severe form of inflammation of the colon, which I have several times observed.

Dr. Morehead gives an instance of fecal abscess, in the right iliac fossa, from perforation of the cæcum in dysentery.

If the acute symptoms have subsided, the injection is less deep in colour, and often gradually becomes gray; the edges of the ulcers

¹ Morehead on Diseases of India.

become rounded and less prominent; the surface has a smooth and fibrous appearance; ulcerative action has been checked, and cicatrization has commenced. The healing process may go on, so that the cicatrix has an irregular puckered appearance. The base of the cicatrix is formed by fibro-cellular tissue, but the gland structure is not reproduced. The contraction of the cicatrix sometimes produces considerable constriction of the intestine, and occasionally tends to fatal obstruction. Very frequently above the cicatrix all the coats become hypertrophied, showing that there has been much impediment.

Dr. Wilks has mentioned to me a case in which the cicatrix presented a growth at its margin, evidently of a carcinomatous character, indicating a greater tendency to heterologous deposit in new tissue.

In a fourth stage of dysentery the mucous membrane presents a gray ashy appearance, and considerable portions of it constitute ragged and semi-detached sloughs.

The *sequelæ* of dysentery, unless death have resulted from the severity of the disease, are: 1. Perforation of the intestine and fatal peritonitis. 2d. Fecal abscess. 3d. Gradually increasing exhaustion from the destruction of the mucous membrane. 4th. Constipation, arising from the contraction of cicatrices, leading to very troublesome and irregular condition of the bowels, and sometimes fatal obstruction. 5th. Pyæmia and suppuration in the substance of the liver, from the absorption of pus, as described by Dr. Budd, in his work on Diseases of the Liver; this last result I have only once observed at Guy's, in simple English dysentery, which is nearly in accordance with the experience of Dr. Baly, at the Millbank Penitentiary, and shows that whilst the disease may be the same in its general character and pathology with tropical dysentery, there is some modifying cause.

Symptoms.—A sensation of coldness in the loins, chilliness, or actual rigor, is followed by a loose evacuation from the bowels; this is repeated, and the evacuations become scanty, but often accompanied with tenesmus, or a forcing sensation as if the intestine retained its fecal contents. With this there may be slight pain or soreness in the iliac region or position of the transverse colon, and even severe griping. The amount of febrile disturbance, and the alteration of the tongue, are very varied, but the latter symptoms do not always exist. In very mild cases the energies and mental activity are as usual, but the face becomes pallid, and the strength is not equal to accustomed duty.

This condition may continue for several days, the patient becoming more feeble, the motions watery, or containing mucus and blood and scybala passed with pain. The countenance becomes haggard, and expressive of distress, the skin clammy, and the pulse compressible; the abdomen is collapsed, and tolerant of pressure, the pain paroxysmal, and the colic occasionally very severe.

If the disease continue unchecked the strength fails, the pulse becomes more rapid and compressible, the eyes sunken, the tongue becomes brown, or is dry and cracked, the motions are passed involuntarily, and often are of a greenish colour, or like the washing of meat; the lower extremities become cold, the hands and face covered with clammy sweat; occasional cramps come on; the patient is sensible, but speaks in a feeble tone of voice, and at last dies, more suddenly, perhaps, than those around him had anticipated.

These symptoms may only extend over a very few days or hours, and sometimes are accompanied with much febrile disturbance, tenderness of the abdomen, furred and brown tongue. If the severity of the disease abate, the bowels become more composed, and the patient rallies: or the diseased condition returns with greater severity; the first exhaustion is scarcely recovered from before the strength is still further reduced, and in this way the malady may extend over weeks, or months. The patient then has a peculiar and characteristic appearance; he is much emaciated, somewhat sallow, his mind active, but physical strength fails gradually, till at last he is obliged entirely to take to his bed from a sense of utter prostration.

In the dysentery of the tropics, or the equally severe disease observed in the hardships of war, the prostration is more rapid, the disease more quickly fatal, and in some instances accompanied with violent delirium.

In reviewing the symptoms of inflammation of the colon in its severe forms, we have been struck with the occasional absence of febrile symptoms, as indicated by hot skin, furred tongue, or excited pulse. The tongue indicates the condition of the whole nutritive function, rather than that of isolated portions of the alimentary canal, unless it be itself affected with local disease.

If the peritoncum become inflamed, or the extension of disease to the muscular coat produce irregular muscular contraction, pain often of a severe griping and paroxysmal character is the result. The amount of pain appears to be greater in disease of the small than of the large intestine, perhaps on account of its greater mobility.

The character of the evacuations deserves particular attention. They may consist of fluid feces containing scybala, or, without any such antecedent, consist only of mucus with blood. The mucus is often tenacious, and passed in considerable quantity, with much tenesmus, and occasional small scybalous masses. The discharge becomes in severe cases thinner, greenish in colour, or, from the admixture of more blood, resembles the washing of meat. The inflamed colon, by its spasmodic contraction, prevents the discharge of the more healthy contents, which are retained above the seat of disease; or they are passed very rapidly, in a fluid state, whilst the pouches

of the colon are filled with consolidated masses, which constitute the scybala previously alluded to.

The cessation of the discharge of blood and of mucus, the absence of tenesmus, and the return of bilious fecal evacuation, are signs of returning health.

The violent and often most distressing tenesmus, is especially caused by the involuntary action of the muscular fibres of the rectum, and its abnormal sensibility; but where this part is not affected the tenesmus is much less severe.

The sympathetic connection of the large intestine with the cerebro-spinal system and with other organs, though intimate, is less than that of the small intestine or stomach; the function of these parts is very different in relation to the vital processes. The large intestine is an elongated receptacle for waste material; it is excretive in its function, although closely connected with the condition of the blood, and affected by general causes; the small intestine, on the contrary, whilst in part excretive, is more especially connected with the absorption of nutritive substances, by its capillaries and villi, and with the subsequent elaboration, by means of mesenteric and other glandular structures. Hence we find *less* disturbance of the pulse, and of the circulation generally, of the cerebrum, of the appetite, &c., in disease of the large than of the small intestine.

The urino-genital organs, however, sometimes sympathize in attacks of dysentery, and we find the patient suffering from difficulty in micturition.

Dr. Baly describes delirium and typhoid symptoms closely resembling fever, but these symptoms were not present in the cases that have come under my notice, unless associated with pneumonia, &c.

Severe symptoms, indicative of great functional excitement of the nervous system, were observed in the Millbank Penitentiary: cramps, catalepsy, tetanus, &c. The peculiar condition of the patients, depressed in mind, deprived of their wonted excitement, and the influence of their usual comforts and associations, spare diet, &c., were probably, as the author¹ states, the cause of the latter symptoms.

In some the cramps were as severe as in Asiatic cholera.

Intermittent and remittent fever are sometimes associated with dysentery, and increase the severity of the disease. Dr. Morehead, however, rarely observed it.²

Causes.—Exposure to noxious miasmatic effluvia appears to be the most fertile source of the disease, especially when associated with sudden change in the temperature. The districts of Bermondsey, Rotherhithe, and Deptford, are those in which the cholera showed its greatest virulence; and it is in these parts that very many cases of dysentery occur. The borough of Southwark is so situated that the drainage can be very inadequately completed;

¹ Baly on Dysentery. Gulstonian Lectures.

² Morehead on Diseases of India.

the air is damp, and in many parts there are offensive effluvia. There is great similarity with that of the Millbank Penitentiary, but the prison is more advantageously situated for health than some parts of the localities referred to. If, however, with this predisposing cause be associated exposure to cold and wet, especially during the hours of night; or the common attendants of poverty, as, sleeping in damp rooms, or clothes—the latter being inadequate to counteract the inclemency of the changes of the weather—the diet improper, and scarcely sufficient to sustain life; intemperance, anxious and depressing cares—we have ample exciting causes of dysentery.

Many of those who are thus attacked are also enfeebled by other diseases, as by struma, or phthisis.

The effluvia from drains, &c., are a common cause of dysentery, and are sufficient alone to produce the disease.

In the active life of a soldier we find nearly all these causes in operation; and the forms of disease thus manifested are more fatal than the field of battle itself. Such has been the testimony of nearly all the writers on military surgery and medicine.

Inflammation of the colon is, however, set up without any miasmatic influence; thus, as in poisons, inflammation of the stomach and the colon may be produced without the intervening small intestine being affected; so with irritating ingesta and excretions, which appear to be in some instances the sole cause of the complaint.

Many believe in the contagious character of the disease. They have found it extend from one to another, to attendants, or from house to house, &c.: but it must be remembered, 1st, that in many of these cases there is a general pervading influence, miasmatic or otherwise; 2d, that the effluvia from the dysenteric discharges are exceedingly offensive; 3d, that animal effluvia are of themselves sufficient to induce the complaint. That the depressing effect of night watching, and of witnessing the rapidly fatal termination of the disease, tends also to induce the complaint.

The occasional similarity of dysentery to typhoid fever, or the diseases taking place at the same time and in the same patient, do not warrant us in considering it as of the same character or type of disease as typhoid fever—a blood disease associated with special changes in the glands of the intestine. There are few diseases that have not more or less of a constitutional origin, and dysentery is doubtless of that character: but in some there is evidence of poison contaminating the blood, leading to a special train of symptoms, as in smallpox, or in pyæmia. There does not appear to be warrant for supposing that such is the case in dysentery, more than in cancer oris, ulcerative stomatitis, or diphtheritic inflammation of the pharynx. Some cases doubtless arise from diseased condition of blood, whilst others are of a different character—as in pneumonia: sometimes produced by direct exposure to cold; and its action on the lungs; or, again, the blood is in such a condition from pyæmia

or other septic changes, that pneumonia is induced without any fresh exciting cause. Some of the cases here recorded appeared to be produced by irritation extending from the rectum; others from direct irritation caused by improper food; a third class from a morbid condition of the whole circulating fluid.

The *Prognosis* is unfavourable where the purging persists with blood, and thin serous offensive discharge like the washing of meat. Where there is involuntary discharge from the bowels, great tenderness of the abdomen, typhoid symptoms, irregular pulse, and great prostration of strength; or where these symptoms have continued for a considerable time, or one relapse has followed another, without the patient in the interval regaining strength, but retaining the same sallow and haggard expression; where there are cerebral symptoms, coma, delirium, convulsions, we judge unfavourably. On the contrary, where, on the removal of the causes of the disease, the evacuations assume a healthy appearance, the pulse remains firm, the prostration becomes less, the tenesmus ceases, and the patient gains strength, we may give a cheering prognosis.

Diagnosis.—There are several conditions which may, unless due care be used, be mistaken for dysentery.

1. The discharge of blood from hæmorrhoids, with diarrhœa, especially with prostration. Ordinary care alone is necessary to guard against this error.

2. *Disease of the rectum.*—The lower part of the rectum sometimes becomes ulcerated, and leads to a discharge of mucus and blood with tenesmus, with great anxiety and sympathetic nervous disturbance to the patient. It will be found in many of these cases, that a small quantity of mucus or pus escapes from the rectum at irregular intervals.

3. *Polypus in the rectum* will produce like symptoms. Many of these cases can be detected by examination per rectum; others, however, are beyond the reach of the finger, and we can then only decide by the difference in other symptoms. In these instances healthy feces are passed, but coated or followed by mucus or pus, and the constitutional disturbance is less severe.

4. *Fibro-cellular ulceration.*—By this we understand, a condition of rectum non-cancerous; the mucous membrane ulcerated and the coats converted into dense fibrous tissue.

5. Some of the forms of *diarrhœa* resemble the earlier symptoms of dysentery, but are generally distinguished by the absence of blood with mucus. In some cases, however, where there is disease of the mesenteric glands, with persistent diarrhœa, and prostration of strength, we are apt to believe that there is ulceration of the colon; the stools, however, are different, less of mucus and no blood, none are like the washing of beef, nor do we in most cases detect blood by the microscopical examination of the evacuation.

6. Feeble condition of the sphincter ani, and of the muscular coat of the intestine, leading to the involuntary discharge of fluid

feces, might induce us to believe there was an abnormal condition of the mucous membrane of the colon.

Treatment.—One of the most important considerations is to remove all exciting causes, and the general conditions in which the disease has had its origin. The patient should be clothed in flannel, and the temperature of the body maintained, dampness and cold carefully warded off, and improper diet avoided.

Demulcents administered by the mouth have many feet over which to pass before reaching the large intestine, but they act very beneficially by rendering the excreta poured into the colon less irritating and thus soothing the diseased membrane. In this way arrowroot, linseed tea, mutton or veal broth, milk with suet, rice milk, tapioca, &c., may be both grateful to the patient, and act remedially, as before mentioned; but they must be given in considerable quantity, otherwise they would scarcely reach the colon. Water alone has been used for this purpose, though inferior to demulcent drinks. By these means alone many attacks may be relieved, and the patient speedily recover.

The diet calls for much attention, equally in the early stages and milder forms, as in those of a more severe character; but in the former it is often more difficult to persuade the patient to follow our directions; being free from pain, the tongue clean, the appetite craving, he does not at once see the importance of using proper care. Any imprudence perpetuates and aggravates the disease. Malt liquors and spirits should be abstained from. Meats in a solid form are generally better avoided, but when taken should be in an easily assimilable form; not richly dressed or highly seasoned.

In protracted cases of dysentery, it is necessary to take animal food, and in other ways very desirable to sustain the strength of the patient as far as possible. For a time, at least, it is well to omit vegetables and fruits, and especially when uncooked. Oranges, grapes, &c., by supplying to the system that which is necessary for the maintenance of sound action, without much indigestible product, may sometimes be taken with great benefit: but apples, stone, or wall fruit, &c., do harm.

Rest is desirable, and in very many cases the patient is too ill to leave the recumbent posture; and in chronic disease, *fatiguing* muscular exertion must also be abstained from.

Other remedies, which have been of most frequent use, have been opium; astringents, both metallic and vegetable; ipecacuanha, mercurials, depletion, enemata of various kinds, &c.

Opium is of almost universal application, but cannot be given indiscriminately, either alone or in combination; it acts partly by its astringent properties, partly as a narcotic, by its secondary influence upon the inflamed mucous membrane, through the sympathetic system of nerves. It is often administered alone, but more frequently in combination with ipecacuanha, as in Dover's powder; with astringents, as in the compound krameria mixture, or compound

logwood mixture of Guy's; in combination with mercurials, as calomel, or gray powder, and lastly, in enemata.

Mercurials.—Calomel has been very largely and notoriously administered in dysentery, by the practitioners in India. ℥j doses are described by Annesley as productive of essential benefit; others have now given up its use altogether, in the severe dysenteries of the East. Its administration, in more moderate doses, is often advantageous. In the earliest stages, where the motions are of unhealthy character, pale, or containing hard scybalous masses, it is well to give a dose of calomel, or of gray powder, followed by castor oil, guarded by opium; or the opium may be combined with the mercurial; calomel with opium, or gray powder with Dover's powder; in this way offending substances may be removed, and acrid excretions rectified and corrected; but it is, we believe, unwise and uncalled for, to persist in the use of mercurials. We have no facts to show that the inflammation of the mucous membrane is diminished by its action, but rather that it is increased, and ulceration accelerated.

Purgatives.—Almost the same may be said of these remedies as of mercury. In the earlier stages of dysentery, or dysenteric diarrhœa, where oftentimes irritating and crude materials are retained, or equally irritating secretions poured out, they are of value; castor oil, or linseed oil, with tincture of rhubarb, and small doses of tincture of opium, is an old and valuable remedy for this purpose. It may be repeated several times during the day, with manifest improvement of the alvine evacuations, and relief to the tenesmus and the pain. Violent purgatives are, however, neither beneficial nor warrantable.

Ipecacuanha was introduced into Europe as a remedy for dysentery, nearly 170 years ago, and has been used with success since that time; large doses have been given without producing vomiting, as by Sir J. Pringle, in gr. v to ℥j doses, and by Mr. Twining, with extract of gentian; but much smaller doses are equally effective. *Ipecacuanha* appears to have the same beneficial action, in inflammation of the alimentary, as of the respiratory mucous membrane, in relieving the congestion, and so restoring healthy secretion. It has been given in various combinations, frequently with opium, or with vegetable astringents, as kino, krameria, logwood, catechu, &c.

Astringents.—Sulphate of copper, acetate of lead, oxide and nitrate of silver, trisnitrate of bismuth, sulphate of iron, have all been used in dysentery; several of those named act by their direct astringent property, others become absorbed and are sedatives to the mucous membrane; some of these remedies have been used in combination with opium, as copper, lead; others, with considerable success, as injections, and in that way applied directly to the diseased surface; nitrate of silver was in this way used by Trousseau, gr. x to xij to a half pint of distilled water; so, also, borax in about

ʒj doses; in some I used charcoal, ʒij with Oss of thin gruel, and with evident relief.

Vegetable astringents, as krameria, kino, logwood, and catechu, are of great value, especially in combination, as in the krameria and logwood mixture of Guy's, before referred to. Cusparia is a more stimulating astringent and tonic, and often is of great service after the more active symptoms have subsided.

Tannin and gallic acid have been used, but I have been disappointed in their action. The rind of the pomegranate root is a favourite remedy with some, but is a less effective astringent than others just mentioned. The Indian bael has, probably, not had the trial with us that its merits demand.

Earthy astringents.—Chalk is one of the ordinary remedies, alone or combined with opium and astringents, at the outset of dysenteric diarrhoea, and is frequently sufficient to check the purging; but in many cases no form of astringent or sedative will serve to restrain the purging, whilst irritating excreta and other substances are retained; and in others, so great is the extent of the disease, that it is almost futile to attempt to check it by a grain or two of medicine which acts locally, whilst the disease covers many feet. By demulcents, by removing the cause of the disease, by correcting the general disturbance, or sustaining the patient during the degenerative changes which are in operation, we must seek to shorten the morbid action and restore to health.

Mineral acids.—After the urgency of the symptoms have subsided, mineral acids, both sulphuric and nitric, appear to act beneficially on the mucous membrane in restoring healthy vigour. I have not found the benefit from dilute sulphuric acid that some practitioners have observed: but it is a remedy of value, and well deserves a trial.

Depletion.—I have never observed a case of dysentery where venesection could have been tried with probable success; but local depletion is often of great service, either applied to the anterior surface of the abdomen, or to the anus. The latter more directly acts on the intestine, on account of the connection of the inferior hæmorrhoidal with the inferior mesenteric veins; ten or fifteen leeches may thus be applied with benefit to the pain and to the violent tenesmus, &c.

Enemata often afford very great relief by washing out the lower part of the rectum, by soothing the inflamed membrane, by their warm demulcent effect; in this way gruel, thin starch, or barley water may be used with much relief; but their efficiency is increased by the addition of tincture of opium. Borax, or nitrate of silver, is used, as we have before mentioned, and sometimes charcoal: these agents and vegetable astringents, as oak bark, have been more especially tried in chronic dysentery.

Suppositories, composed of opiates or anodynes, afford much relief to the tenesmus, but are less effective than enemata.

In the constipation which follows the cicatrization of dysenteric ulcers, much relief is afforded by the use of sedative, with aperient medicine, as by the colocynth and henbane of the Edinburgh Pharmacopœia with ipecacuanha, or by soap with rhubarb and capsicum.

A change to more genial climate is often productive of the most beneficial result; this applies with greater force to residents in India, than to those who have contracted dysentery in our own country.

The following fatal cases of dysentery were, with one or two exceptions, produced in our own country, and well illustrate the varied causes of death in the disease :—

Harriet S., æt. 28 years. Acute inflammation of the whole of the colon.

Elizabeth H., æt. 7. Acute inflammation of the whole of the colon.

Ann H., æt. 60. Inflammation of colon, after hernia.

Edward B., æt. 39. Inflammation of colon. Perforation, fecal abscess.

James T., æt. 59. Inflammation of colon. Perforation, submucous suppuration. Pus in the vena porta. Inflammation of the liver.

Sarah W., æt. 34. Dysentery. Perforation of colon.

Thomas R., æt. 31. Chronic bronchitic phthisis, cirrhosis, contracted abscess of liver, chronic dysentery, and chronic peritonitis.

Thomas D., æt. 25. Chronic dysentery, hepatic abscess, pyæmia, abscess in the brain.

Evan T., æt. 33. Cicatrization and contraction of the rectum and sigmoid flexure, after dysentery.

Mr. W., about 35. Dysentery, cicatrization, contraction, abscess near the crest of the ileum.

They indicate, I. that dysentery of a most severe form arises in our own country, and is not of unfrequent occurrence.

II. That the cause of death, in some, is the extent and severity of the affection.

III. That some die from perforation and fecal abscess.

IV. That pyæmia follows some of the worst forms of English dysentery.

V. That the constriction of the intestine sometimes leads to abscess in the parietes and artificial anus.

VI. That in the worst cases astringents and opiates are ineffective.

VII. That injections and demulcent remedies afford considerable relief, and in mild cases will alone be sufficient; but are inferior in their efficacy to astringents and opium.

VIII. That rest even in mild cases is desirable.

Many cases have presented themselves, in my own practice and sphere of observation, where these means checked the purging, and restored to health.

IX. That as far as can be judged, mercurial preparations would have been injurious.

CASE CXII.—*Inflammation of colon. Aphtha, or muguet of pharynx.*—Harriet S—, æt. 28, was admitted July 18th, 1855, under my care.

She was a married woman who had resided in the Borough, the wife of a butcher, a thin, pale-looking woman, who had been out of health for six months, with occasional diarrhœa; during the last seven weeks, however, she became much worse; her illness came on after exposure to cold on entering a new house; she had great lassitude, weariness, and severe pain in the limbs; these symptoms increased, and she was admitted into St. Thomas's Hospital, and there passed blood and mucus from the bowels. She stated that her family were healthy, but that she had previously had an attack of inflammation of the bowels. On admission, she had the appearance of a patient suffering from acute pneumonic phthisis; the lips and nostrils thin; the cheeks sunken; the skin was hot and clammy; the conjunctiva and skin generally of a very slight jaundiced yellow colour. Along the gums was a pale red line; the tongue was coated with a yellow fur, dry and brown, and in the centre were several aphthous patches; the throat was dry and injected, but she complained of difficulty in swallowing, and it was painful to her to speak much. The pulse was 112, soft and full. The chest was well developed; the respiration coarse at the apices, but otherwise normal. In the abdomen a large mass of the form of the liver could be felt, extending nearly to the crest of the ileum, and across the umbilical region. The abdomen was flaccid, but slightly tender on manipulating the right hypochondriac region. The motions were passed involuntarily, and were slimy and of a green colour; three or four were passed involuntarily, and were slimy and of a green colour; three or four were passed in an hour. She had no cough or expectoration: the catamenia were irregular.

Ætheris chlor. \mathfrak{m} v; mist. krameriae comp. \mathfrak{z} j. Haustus ter. die. sumendus.

Wine \mathfrak{z} vj, with arrowroot.

Pil. saponis eum opio gr. x, pro suppositorium.

July 19th.—Skin moist, tongue thickly coated with dry fur. She had no sleep in the night. There were sordes on the teeth, and the breath was offensive; pulse 112, compressible. The motions were offensive; the legs cold; the abdomen slightly tender.

Rep. mistura et suppositorium.

Cataplasma papaveris abdomini applicetur.

21st.—The poppy poultice afforded temporary relief, but the purging continued, and the patient was more prostrate.

Adde tr. opii \mathfrak{m} x, misturæ.

Pulv. opii gr. j, statim.

23d.—Patient weaker, drowsy from the action of the opium; pulse 118, feeble and compressible. She became more and more prostrate till death. The adm. of lead and opium, and chloroform afforded slight relief.

On inspection, the pharynx, the posterior part of the tongue, the tonsils, and the anterior part of the epiglottis were covered with a yellowish-white crust; this was very adherent at the lateral portions of the root of the tongue, and on the glossal surface of the epiglottis this membrane was so fixed that it could not be washed off by water. The surface of the epiglottis beneath it was much injected, but only towards the tongue. On examining a portion of this substance, it was found to consist of delicate interlacing torule, some jointed, and much resembling the torula cerevisiæ; it was mixed with particles of fat. The larynx, internal surface of the epiglottis, trachea, and bronchi were all free from disease. The lungs were healthy, so also the pleura, and quite free from adhesions. The muguet did not extend into the œsophagus, excepting at its upper part. The heart and pericardium were healthy, but there was an excess of fat external to the heart.

Abdomen.—There were old adhesions of the omentum. The stomach was healthy, and on microscopical inspection its follicles were full of secreting cells and granules, with only small quantity of fat. The liver extended to the right iliac region; it was exceedingly fatty, of pale yellow colour, and lighter than water. The gall-bladder contracted and empty; weight of the liver 8 lbs. 6 oz. Spleen, corpuseles distinct, its weight $6\frac{1}{2}$ oz.

The peritoneum was healthy; there was a moderate amount of fat in the mesentery,

and the glands near the cæcum were enlarged and somewhat swollen. The intestines were moderately distended. On opening the colon it was found to contain fluid feces; the whole mucous membrane was covered by an adherent whitish layer, having a granular almost villous appearance; it was of a yellowish red colour, which was more marked towards the rectum; the mucous membrane was swollen, and in some parts presented small aphthous ulcers about a quarter of an inch in diameter. The submucous cellular tissue was white and thickened; the muscular coat also appeared very thick and distinct. This false membrane consisted of a blastema containing granules, highly refracting particles, and some cells, but no well-marked cells or epithelium. The last foot of the ileum was much injected, and presented several irregular ulcers, but no membrane similar to that in the cæcum and colon.

The kidneys were pale and large, their weight 11 oz. The uriniferous tubes contained granules and oil particles.

This case of acute inflammation of the colon came on gradually. For six months the patient had attacks of diarrhœa, but for seven weeks the symptoms were severe, and of the character of dysentery; the motions contained blood and mucus, and became afterwards green and slimy. On admission into Guy's she was in a typhoid condition, and almost dying. Her general appearance resembled a case of pneumonic phthisis with dysentery, but there were no physical signs of phthisis. In the treatment the patient was too prostrate to bear the application of leeches, otherwise it might have been desirable. The astringents which were administered afforded only very temporary relief, and opium quickly produced torpor of the brain.

CASE CXIII.—*Diphtherite of colon. Dysentery. Chorea.*—Elizabeth H.—, æt. 7 years, admitted into Guy's, February, 1855. She was a dark, strumous child, who five weeks previously, without apparent cause, became affected with chorea; she improved under the use of sulphate of zinc gradually increased, and purgatives, for the bowels were generally constipated. A few days before death diarrhœa came on, with prostration, and symptoms very much resembling Asiatic cholera; the diarrhœa consisted at first of blood and mucus, which afterwards became thin and watery. On the seventh day after the onset of the purging the child died.

Inspection.—The eyes were much sunken. The cerebral veins were full of partially decolorized clot, and the ventricles contained more than the normal quantity of fluid. The lungs appeared healthy, except a circumscribed patch at the middle of the left lung, where was a strumous mass about the size of a hazel-nut, and some tubercles around it. The inner aspect of the mitral valve was fringed with minute vegetations, firm, semitransparent, and surrounding the edge of the valve, the largest the size of a pin's head. The inner surface of the tricuspid was slightly roughened. The pericardium healthy. The weight of the heart $3\frac{1}{2}$ oz.

The stomach was healthy. In the jejunum were a few of Peyer's patches visible and injected; in the ileum they were very distinct, and near the cæcum were covered with a delicate inflammatory deposit of lymph. The large intestine was diseased throughout. The whole of the mucous membrane was of a dark green colour, covered with firm granular deposit of lymph. The disease increased in severity from the cæcum downwards. The cæcum was acutely inflamed, being of a red colour, and the mucous membrane entire. Lower down the mucous membrane became green, and was covered with inflammatory deposit, and in the rectum the inner surface was raised into folds or irregularly shaped eminences. In the descending colon, when the adventitious product was removed, the tissue was seen to be swollen, full of blood, and in some parts superficially ulcerated. The muscular coat was much thickened. The kidneys were healthy.

This case was supposed to be one of Asiatic cholera, and unless a careful inspection had been made, might have been so recorded.

The suddenness of the diarrhoea, the rapid collapse and prostration, closely resembled that disease. Other cases of cholera had occurred about the time. The treatment used, starch and opium injections, &c., did not appear to have any effect upon the malady.

CASE CXIV.—*Inflammation of colon. Hernia.*—Ann II —, æt. 60, a single woman, a servant, who had resided at Peckham, was admitted into Guy's, February 6th, 1857. She had had hernia for ten years, but her general health was good. Five days before admission the hernia came down; she was seen by a practitioner, and after taking eroton oil, various purgatives, shot, &c., was admitted into Guy's. She was much depressed and collapsed; there were constipation, stereoraceous vomiting, great pain in the abdomen, and some tenderness. A tolerable large femoral hernia was found in the right inguinal region.

A grain of opium was given at once, and the hernia was reduced by taxis without difficulty.

On the following day, the 7th, the bowels were opened, and the patient felt herself relieved.

Hydrargy. chloridi gr. j, pulv. opii gr. j, were administered, and to be repeated every four hours, and she was allowed beef-tea.

At night she had no sleep on account of pain, and the opium was repeated.

On the third day, the 8th, the bowels were relaxed, the tongue furred; she had much pain in the abdomen; the pulse was feeble and frequent.

A chloroform draught was administered every four hours.

On the fourth day, the 9th, the purging continued; the stools consisted of mucus and fluid feces, light in colour, and very offensive; the patient was prostrate, but she had less pain.

An enema of soap and opium was administered.

On the fifth day, the 10th, the abdomen was slightly tender. She had slept better. The diarrhoea continued, but she had no tenesmus. The enema was repeated. On the 11th the compound krameria mixture was given every six hours.

On the seventh day, the 12th, the diarrhoea still continued; the patient became more prostrate and was unable to sleep; the motions consisted of mucus and blood. On the following days the purging continued, and the prostration became at last extreme, the tongue dry, pulse more feeble. Tomentilla with opium and tannic acid, and acetate of lead with opium, were given, but on the 28th, the 14th day after the hernia had been reduced, and the 19th since the commencement of the illness, she died. For some time before death there was low muttering delirium, cold extremities, and almost insensible pulse.

Inspection was made a few hours after death. The body was much wasted, the eyes sunken. The lungs and pleura were quite healthy, the lungs collapsed; the heart was small.

Abdomen.—The peritoneum was healthy. The œsophagus was normal, so also was the stomach; jejunum was congested, the valvulae conniventes covered with mucus. Eight feet from the cæcum about four inches of the ileum was of a deep purple colour, and had evidently been strangulated; it appeared to be recovering. Below the strangulation the ileum became much more congested, and for four feet from the cæcum the intestine was acutely inflamed; the mucous membrane was covered by a yellowish-green adherent exudation, nearly a line in thickness: it was with difficulty removed. The valvulae conniventes were exceedingly prominent, rigid and erect. The whole of the mucous membrane was much thickened, the muscular coat more than a line in thickness, and the areolar tissue very œdematous.

On making a section of this portion of intestine (see Fig. 6), the exudation was found to consist of cells and granules, and appeared to be quite continuous with the follicles of the mucous membrane (Liebkuhn's); these follicles were exceedingly distinct,

Fig. 6.



Section of mucous membrane of portion of ileum in acute inflammation of colon and ileum, showing the surface covered with false membrane (diphtherite) and continuous with the mucous follicles. (Case CXIV.)

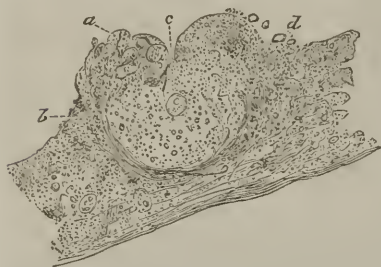
and were evidently distended to the utmost. It appeared that the secretion from these follicles was changed by the diseased action, that it was excessive in quantity and abnormal in quality, perhaps more fibrinous and corpuscular; the form of the follicles was retained in the exudation, as if it had been exuded rapidly. The submucous cellular tissue was much thickened from inflammatory œdema.

The colon from the cæcum to the rectum was more diseased; in the cæcum the mucous membrane had a reddish-gray colour, with minute highly injected points studing the surface; some of these points presented a darker coloured centre, others were scarlet. In the place of others were minute ulcers, the mucous membrane eroded, the edges injected, the surface whitish-gray, but there was no apparent slough. In the ascending colon more of the mucous membrane was destroyed, and elongated ulcers were found, about half an inch in length, with irregular, injected or partially undermined margins, the floor consisting of whitish lymph-like exudation: between these ulcers there were minute red points or reddish mucous membrane with exudation. The whole of the colon presented a similar appearance, even to the rectum.

The appendix cæci was long, and at its extremity were about half a dozen small shot.

The examination of the mucous membrane of the cæcum showed that the minute red points were solitary glands. See Fig. 7, which represents one which was of a

Fig. 7.



Section of solitary gland from the cæcum, showing (a) edges of raised portion intensely injected from distended capillaries; (b) surface of mucous membrane covered with diphtheritic granular membrane; (c) opening into gland; (d) small crystals—phosphatic. (Case CXIV.)

bright colour, with a rather deeper centre. The portion above the level of the mucous membrane showed distended capillaries, and there was in the centre an opening extending into the gland. In the gland were minute nuclei, and a large cell was observed with a nucleus. It appeared probable that from the different and darker colour of the congested part that the circulation in those capillaries had nearly ceased, and would very shortly have sloughed and formed the ulcers observed in other parts. The adjoining mucous membrane was somewhat similar to that of the ileum, but the follicles were less distinct. Some crystals were observed on the surface.

The liver was healthy, so also the spleen, kidneys, bladder, uterus, ovaries, and the mesenteric glands; in fact no disease was found except in the intestines.

The hernial sac was empty, and its opening nearly closed.

In this case there was acute inflammation of the whole of the colon, and several feet of the ileum; it was of a character which underwent rapid changes. Was it dysentery so called, or inflammation of a different kind? In the cæcum and colon we find that the solitary glands were diseased, rapidly leading to the destruction of the membrane; but these glands were not the only parts affected, the follicles and all the structures were diseased, as we find with the follicles in the ileum; the mucous membrane was œdematous, and the muscular coat also. Very drastic purgatives and violent means had been used at the onset of the disease, and probably contributed to the severity of the affection. The bowels began to act very shortly after the hernia had been reduced, and did not cease to act till death. As to the symptoms, they were those of dysentery; the stools consisted of blood and mucus, the prostration became gradually extreme, the pain was sometimes severe, but she had never the tenderness of peritonitis. The disease was probably, to a great

extent, constitutional in its character, but excited by direct irritation.

The application of leeches to the anus might have afforded relief, but it must be remembered that we had a woman sixty years of age, collapsed by hernia and stercoraceous vomiting, and if such had been used the prostration might have been hastened. The application of astringents to a surface so extensively inflamed and diseased, when administered by the mouth, are at most very inefficient remedies; they have to pass at least twenty feet of mucous membrane before reaching the colon. Injections are more direct, and are applied at once to the diseased surface; starch and opium was the only injection used; but even this mode could scarcely be expected to reach the colon in its whole length.

CASE CXV.—*Dysentery. Ulceration of small intestines. Perforation. Fecal abscess. Peritonitis.*—Edward B—, æt. 39, admitted Oct. 19, 1853, and died November 8th. He had been a stout hearty man, living at Walworth, a labourer in the London Docks. His health had been unimpaired, and his habits regular. Six weeks before admission he ate a considerable quantity of coarse sugar, and three days afterwards he had diarrhoea, copious liquid evacuations, and severe colic. This continued till admission; he had become thin and weak, having been unable to take any food since the commencement of his illness. On admission the bowels acted every half hour. The evacuations dark brown; no blood passed. There was tenderness over the cæcum and descending colon; he had no appetite, the mouth was dry and parched, and he had considerable thirst; he had nausea, but did not vomit. His countenance was dejected, the body emaciated and feeble.

The heart and lungs appeared to be healthy. The tongue became very red and injected. Great prostration came on, sordes on the teeth, the purging continuing unabated. Kino, cusparia, opium, gallic and sulphuric acids, &c., were administered, but with slight relief.

Inspection eighteen hours after death.—*Chest.*—Slight adhesion existed at the apex of the right pleura, and in the lung at the same part was some calcareous deposit and old thickening of the tissue; the lungs were otherwise healthy. The heart was flabby; the right ventricle contained firm fibrin and clot; the left side also was moderately distended. The valves were healthy, with the exception of slight athromatous thickening about the aortic semilunar valves. The abdomen was collapsed. The intestines contracted, but there was universal moderate injection of the peritoneum, and the coils of the intestine were united by fibrinous adhesions. On separating the abdominal parietes from the sigmoid flexure, one part of the intestine was found to be destroyed through all its coats for a considerable part of its circumference, and a small fecal abscess had been formed. At the cæcum also and rectum, extravasation of feces was only prevented by external adhesions. The large intestine was ulcerated in its whole length; at the cæcum were several transverse patches of ulceration; immediately above the cæcum the mucous and muscular coats were much thickened, apparently from older disease; beyond this the mucous membrane presented a large slough, and nearly all the mucous membrane was destroyed. Here and there were granular masses like tubercles, or larger portions which had become intensely congested, and were raised above the ulcerated surface, giving it a polypus-like appearance. The sigmoid flexure and rectum were equally ulcerated; in some parts the mucous membrane only was destroyed, in others nearly all the coats. In the small intestine, about eight inches from the cæcum, the lining membrane was intensely congested, and Peyr's glands presented several small aphthous ulcers. The columnar epithelium was scanty, but numerous cells like mucus were observed. The mesenteric glands were enlarged. In the stomach were several points of arborescent injection. Spleen healthy; liver fatty, weight 4 lbs.; gall-bladder moderately distended.

The destruction of the mucous membrane of the colon in this case was very great, both as to superficial extent and in depth; fecal

abscess had been formed subsequent to the perforation. The disease lasted nearly nine weeks, and the remedies did not at all check the symptoms. It is probable that on admission (for the disease had then continued for six weeks) considerable sloughing of the colon existed.

There was no evidence of any miasmatic influence or noxious effluvia, but the diarrhœa and subsequent dysentery were probably produced by the foolish excess of the patient.

CASE CXVI.—*Ulceration of large intestine. Perforation. Submucous suppuration. Pus in the vena porta, and inflammatory patches in the liver.*—James T—, æt. 59, admitted into Guy's Oct. 12, 1853, and died Oct 13, at 5 A. M. He was a labourer in the London Docks, and had "bowel complaint" for two months, gradually becoming worse, and a week before his death he was confined to his bed; he had repeated purging of blood, and became much emaciated.

On admission he had tumid and tympanitic abdomen, but tolerant of pressure, the skin of a dingy colour, the tongue red, glazed and dry; he was in a prostrate condition when admitted, and died the following morning.

Inspection fifty-seven hours after death.—The body spare. *Chest.*—The pleura at the left apex presented a little cartilaginous thickening. There was a white patch over the ventricle, the right distended with clot, the left empty; the mitral thickened and slightly contracted.

The peritoneum was universally inflamed, injected, and covered with effused lymph. The cavity contained dirty fluid, green in colour, and offensive (feculent). On turning aside the large intestine an opening was found above the cæcum. The whole length of the large intestine was ulcerated. These ulcers were transverse, generally about two inches in length. The mucous membrane was ragged and covered with black sloughs; the circumference of these ulcers was thickened. In some parts the mucous membrane was quite destroyed, and the intervening portions of mucous membrane cedematous. The peritoneal surface of the large intestine was observed to be here and there of a yellow colour; on making a section at these parts, the subserous coat was found infiltrated with pus extending from the submucous coat. These abscesses were situated on the mesenteric side of the intestine. The mucous and muscular coats of the rectum were much thickened, and at the lower part of the descending colon was a puckered portion of intestine, ecchymosed and injected.

The small intestines were healthy. The stomach presented partial injection. The spleen and kidneys healthy. Liver presented a thickened layer of peritoneum at its lower border (attrition). Its section yellow, structure soft; on the convex surface of the right lobe was an irregular congested portion about one inch in diameter, and at its centre was a portal vein filled with pus.

Glisson's capsule was thickened, no apparent disease of the trunk of the vena porta or of the inferior mesenteric vein existed; liver generally fatty, weight 3 lbs. 10 oz. On microscopical examination the liver was found to contain very much fat, and Glisson's capsule was much thickened by fibrinous deposit. The thickening of the intestine around the ulcer was found to be composed of hypertrophied muscular fibre, but principally of mucous membrane, with bands of fibrous tissue passing through it.

This was one of the most severe cases of inflammation of the intestine that I have seen; large ragged abscesses extended throughout the colon, and had led to perforation and peritonitis. The commencing suppuration in the liver, and the pus in the vena porta, were confirmatory of the views of Dr. Budd, as to the causes of abscess of the liver. When admitted into Guy's he was in a dying condition, but the disease had existed for two months.

CASE CXVII.—*Dysentery. Perforation of colon.*—Sarah W—, æt. 34, was admitted into Guy's, April, 1847, after having been ill for three months, and worse for three weeks. She had resided at Huntingdon, then at Lambeth; and was the wife of

a fishmonger. Three months previously she had had pitchy evacuations, evidently containing blood; but without pain. Three weeks before admission she had profuse purging; the evacuations contained blood, and scarcely any solid feces; there was much tenesmus, and general pain in the abdomen, which was occasionally aggravated, but especially at the right iliac fossa. Scybala were occasionally passed. There was febrile excitement, and before death, considerable vomiting.

She took opium alone; then lead; ipecacuanha, copper; mercurial inunction was used; leeches applied to the abdomen, and blisters, &c. Wine and suet and milk were administered.

Inspection.—The body was well nourished, and there was a considerable amount of fat in the abdominal parietes. On opening the peritoneum it was found to be exceedingly dry; the transverse colon was adherent to neighbouring viscera by soft adhesions; the omentum extended to the pelvis, and on raising it soft adhesions were found between it and the intestine, which were also much injected at their points of contact with each other. In the left iliac region, on drawing aside the sigmoid flexure, soft adhesions gave way, and a small circular perforation was found; no extravasation had taken place. In the right iliac fossa, the cæcum was more firmly adherent; and close to the union of the vermiform appendix, a long defined opening was observed, but closed by adhesions.

There were also several perforations in the ascending and transverse colons similarly closed; in other parts the peritoneum only was left. Perforations had also taken place in the rectum, but no extravasation from any part. The vermiform appendix was healthy. The cæcum and ascending colon were distended and thickened.

On opening the whole length of the large intestine, the following appearances presented themselves:—

Portions of mucus membrane had escaped ulceration, were softened, and were of a greenish or red colour; large transverse ulcers were found at other parts, their margins defined, in some the peritoneum formed the base, and in nearly a dozen places the peritoneum also was destroyed. Hard, dry scybala adhered in some parts. About six inches above the cæcum the intestine appeared somewhat contracted, and large pouches were formed both above and below. The small intestines were pale, and no disease was observed in them; they contained fluid feces. The mucous membrane of the stomach was thickened and softened. The liver was pale and soft. The gall-bladder was much contracted, adherent to the colon; it contained a small quantity of white, thick mucus, and crystals of cholesterine; the duct was blocked up by a gall-stone, about half an inch in circumference. The spleen was larger than natural, and soft. The kidney presented an irregular contraction on its surface.

The lungs were emphysematous; one or two consolidated lobules were situated at the apex. The heart was flabby; but, with the exception of slight atheroma, the valves were healthy.

In this case the most severe inflammation of the colon had been set up, the coats of the intestine had sloughed, and numerous perforations resulted. The disease had lasted for three months; but a short time before admission it became much aggravated. It could scarcely be expected that the administration of small doses of astringents could check such extensive degeneration, and it was evident that the patient died, not from exhaustion, but from the severity of the disease, and its extension to the peritoneum.

CASE CXVIII.—*Chronic bronchitic phthisis. Cirrhotic and lardaceous liver. Contracted abscess of liver. Chronic dysentery, and chronic peritonitis.*—Thomas R—, æt. 31, a soldier, or rather pensioner, admitted under my care, Oct. 24th, 1856. He had been in the West Indies as a soldier, and had been exceedingly intemperate in his habits, spending all his money in rum, &c. He stated, however, that till three years ago, he enjoyed good health, but had had syphilis six or seven times, and had been salivated five times; and when a child had ague.

Two and a half years ago, while serving in Bermuda, he became exposed to cold at night; the following morning he had severe cold and cough; but did not report himself as ill for six months, having then gradually become much worse. At that time

he spat blood, and had night-sweats, and had great pain in the præcordial region. He remained in hospital for nine months, and left very little relieved. He subsequently went to the Crimea, but was at once invalided, and sent to Scutari.

Sixteen days before admission into Guy's his ankles became swollen, and dropsy rapidly increased.

He was a tall, emaciated man, with an exceedingly anxious, haggard expression; the nails clubbed; the respiration difficult and hurried; and he almost in a dying condition. He complained of pain in the chest and abdomen; the respiration was twenty-four per minute; and he expectorated much thick, greenish, and rusty coloured mucus.

The chest could only be examined anteriorly. On the *left* side it was generally dull; the apex was flattened, and gurgling was very distinct. The right was dull at the base, and sibilant rales were audible. The abdomen was very much distended, and hot; the superficial veins enlarged; the liver could not be distinctly felt, but fluctuation was very perceptible; the bowels were relaxed; evacuations thin and watery; the appetite bad; urine high coloured, non-albuminous, sp. gr. 1.012.

Opium gr. j was given, and repeated at night, and a poultice to the abdomen. On the following day, the Compound Logwood Mixture of Guy's, and some port wine.

The heat and pain of the abdomen became somewhat less, and the patient rather more comfortable for a few hours.

He gradually sank, and died on November 2d. Before death the scrotum became distended, erythematous, and almost purple in colour; so also the nose.

Inspection, Nov. 3d.—The body much emaciated. The abdomen distended; the enlargement of the superficial veins had disappeared. *Chest.*—Pleura universally adherent on the left side, and much thickened; at the apex semi-cartilaginous. On the right side, adherent at the apex; but below there was some effusion, and a few flakes of fibrin. *Left lung.*—At the apex were several small vomicæ freely communicating with the bronchi, and surrounded with dense red lung; nearly the whole lung presented fleshy tissue, irregularly dilated bronchi, in some places extending nearly to the periphery, dense white fibrous tissue, and some iron-gray pneumonia. There was evidently old pulmonic disease, and more recent acute disease with it; quite at the base was a small portion of crepitant lung. On the right side there was old pneumonic condensation; but throughout the lung was granular deposit in small clusters, resembling tubercles, with some condensation around them. The bronchi were much injected, and the mucous membrane thickened.

Heart.—In the pericardium there was an excess of fluid, and some flakes of fibrin. The valves, &c., healthy.

Abdomen.—The peritoneum contained several gallons of fluid; the intestines were moderately distended. The peritoneum opaque, slightly granular, and having very delicate bands between the intestine, like sticky albuminous serum. The liver much contracted, nodulated, and its surface opaque.

On section there was found to be an irregular cheesy mass, about three inches in length, extending from the surface into the substance, surrounded by slight fibrinous investment; the surface contracted. It appeared to consist of two or three collections appended the one to the other. There were numerous other small cheesy masses, situated throughout the liver, about the size of the end of the little finger, and in the course of the vena porta branches. They were apparently the result of inflammatory action, or dried abscesses. The rest of the liver was semi-transparent, and in many parts lardaceous. The gall-bladder was contracted. Spleen enlarged and lardaceous. The kidneys healthy.

Colon.—The whole of the colon presented irregularly healed ulcers, and was granular and thickened; and scarcely any healthy mucous membrane was observable. Small circular, smooth spaces, evidently healed ulcers, studded the whole surface. The coats of the intestine were thickened. The ileum and stomach healthy; so also the kidneys. The omentum was adherent near the inguinal canal on left side.

The original malady appears to have been dysentery, contracted in the West Indies, and which led to abscesses in the liver; these abscesses dried and constituted the cheesy masses found after death, affording a remarkable instance of abscess of the liver, and perhaps pyæmia not necessarily fatal. The intemperate and dissolute habits

set up other diseased action, as that in the lungs; the inflammatory deposit had broken down, and led to the formation of a vomica, or to pneumonic phthisis; repeated attacks of inflammation took place, encroaching more and more upon the lung tissue, and at last in a more severe attack, set up ascites and led to fatal termination. A few granular collections were the only representatives of tubercles, which were, probably, deposited a short time before death, when nutrition was so much impaired. The lardaceous state of the liver was interesting in its connection with syphilis, and perhaps, struma.

CASE CXIX.—*Chronic dysentery. Hepatic abscesses. Pyæmia. Abscess in the brain and lung.*—Thomas D——, æt. 25, admitted February 14th, and died March 19th, 1855. He was a sailor, and had been for two years in the East Indies. At Burmah had ague and dysentery, and was ill for some weeks. For two months had had pain in his side.

On admission, was sallow, and had general cachexia. There was pain in the right side; the chest dull; and it was supposed from the history that he had abscess in the liver.

On February 21st, when sitting by the fire, he fell in a fit, was convulsed, and continued for several days in a semi-conscious condition. On the 28th, could just speak and give his name; continued apparently to improve till the 14th, when he again fell into a semi-conscious condition. On 16th he was unable to sit up and take his breakfast; but shortly afterwards became quite insensible. Had stertorous breathing, which continued till death. It was observed, throughout, that the right leg was weak, and at last paralyzed; the right pupil was smaller than the left; but a few hours before death became widely dilated.

Inspection twenty-four hours after death.

Brain.—Surface of hemisphere dry; at the base were slight adhesions between the surfaces of the arachnoid. In the posterior lobe of the left hemisphere was an abscess about the size of a hen's egg, containing thick, tenacious pus, nearly reaching the surface, and was surrounded with soft brain substance; at the anterior part of the abscess was a clot of blood, surrounded by soft tissue. The abscess had broken into the left lateral ventricle at its posterior corner; the lateral ventricle was filled with pus; the right with about $\frac{3}{4}$ of clear serum; the fourth ventricle healthy.

In the *chest* were old and recent adhesions at bases of both pleural cavities. Bronchi slightly inflamed, containing muco-purulent matter. The base of the left lung contained a small abscess; the base of the right was in a state of incipient pneumonia.

Liver.—In the right lobe, at the upper surface, were two chronic abscesses, capable of holding about $\frac{3}{4}$ of pus; the pus thick and green; the walls of the abscess very thick, bounded by a smooth cyst, and from tissue about one-eighth of an inch in thickness; on circumference of the abscess a compressed vein was observed.

In the *colon* the mucous membrane thickened; several well-marked cicatrices were found in the ascending colon; the mucous membrane was puckered, and in some parts of a slate colour; the muscular coat slightly hypertrophied.

It appears probable, that the dysentery, which had been contracted in Burmah, had led to abscess in the liver, and that this remained passive for many months, producing some moderate hectic pain in the side, &c., and at last, from some fresh exciting cause, new action was set up, acute pyæmia produced, and abscess in the brain the consequence. Dr. Hughes diagnosticated this course of morbid changes, which was completely confirmed, on inspection, after death.

CASE CXX.—*Cicatrization and contraction of the rectum, and sigmoid flexure after dysentery.*—Evan T——, æt. 33, admitted into Guy's, Nov. 16th, at ten A. M., and died Nov. 22d, at two A. M., 1855. He had received, from a weight falling upon him,

fracture of the pelvis, producing laceration of the urethra, &c.; he became more prostrate, and died from the accident and its consequences in four days.

He was a sailor, and had been living at Deptford; he had previously had dysentery, and had been subject for some time to winter cough. His habits of life intemperate.

Inspection twelve hours after death.—The head was not examined. In the chest were some patches of ecchymosis on the pleura; and in the lungs were several patches of lobular pneumonia; the lobules gray and granular; this was remarkably simulating the pneumonia of pyæmia, coming on four days after the accident. There was extravasation of blood into the peritoneal cavity, and the peritoneum was inflamed. The membranous portion of the urethra was lacerated, and the cellular tissue around the bladder was sloughing.

In the rectum and sigmoid flexure, the mucous membrane was gray, and thickened; so also the submucous cellular tissue; in several parts there was irregular corrugation apparently from cicatrization. At the commencement of the rectum the calibre of the intestine was diminished; in some parts the mucous membrane had been destroyed, but the cicatrix was smooth, though destitute of gland tissue. In the prominent portions elongated glands were very distinct, resembling follicles of Lieburkühn.

This case is recorded as a marked instance of the appearance presented by dysentery which had been cured. The cicatrices in the sigmoid flexure and rectum showed the severity and extent of the previous ulceration, and by the contraction of the new tissue, served in some measure, to constrict the intestine.

CASE CXXI.—Chronic ulceration of intestine. Dysentery. Cicatrization. Contraction. Perforation. Abscess near the crest of the ileum. (From the Museum Records.)—Mr. W—, a young gentleman of tolerably temperate habits, who had had syphilis many times; several years before his death had a dysenteric affection, on the subsidence of which his bowels were habitually constipated; this state was attributed to stricture of the rectum, which was felt at no great distance from the anus. A bougie was passed with the effect of considerably dilating the stricture. He subsequently went to America, but he did not prosper. The death of his wife and misfortune were followed by declining health. An abscess formed above the crest of the ileum, towards the posterior part on the left side, and there was continual pain at that part; after the application of leeches several sinuses formed, diarrhœa came on, and he wasted rapidly.

On inspection.—Except pleuritic adhesions, the thoracic viscera were healthy. In the left iliac region the integuments were separated from the tendon of the external oblique, by the sinuous ulceration. In that region, the intestines were glued together; the peritoneum and adjacent cellular membrane were much thickened; the rest of the peritoneum was healthy. In the sigmoid flexure there were numerous traces of old ulceration, of a lightish green colour, surface uneven and the structure of the intestine at the part was thickened and condensed, the calibre of the intestine much contracted. There were three or four small perforations in the intestine at this part; the rectum was healthy, except immediately above the anus, where there was considerable thickening with induration. This evidently depended on an old ulcer, occupying about half the intestine; it was of a leaden colour. The liver was much enlarged and fatty. The gall-bladder contained some ropy mucus. Kidneys, and the rest of the intestines, healthy.

This case is a very interesting one, for although the dysentery was relieved, the cicatrization and subsequent contraction were followed by constipation; ulceration was set up above the points of contraction, and ultimately the intestine was perforated. The sinuses opened near the crest of the ileum; feces do not appear to have been discharged; but the case might easily have been mistaken for supuration from diseased bone.

The contraction consists of fine fibro-elastic tissue, which becomes

more dense than the original muscular coat; it closely resembles that found after the destruction of the skin in burns, and has similar disposition to contract.

II. Acute inflammation of the colon sometimes takes place in common with diseases of other organs; there is a marked difference from the cases previously detailed.

The thoracic viscera are affected with acute disease, the bronchial tubes and lungs inflamed, in fact, almost all the mucous membranes. The symptoms of disease of the chest are more marked than those of the abdomen; dyspnœa, cough, febrile excitement, with the physical signs of thoracic disease, show that it requires the most serious attention. The countenance is anxious and flushed, the skin hot and dry, or clammy, the pulse becomes gradually more depressed, the tongue brown and dry, and the patient prostrate. Very few symptoms beyond dysenteric diarrhœa indicate inflammation of the colon.

In some of these cases, the exciting cause of the inflammation of the lungs and bronchi is also the cause of inflammation of the mucous membrane of the alimentary canal. In others, the symptoms appear to be allied to those of pyæmia, and the affection of the colon is merely another expression of the morbid state of the blood; here, also, the indications of inflammation of the colon are not well marked. Nearly all these cases are of a very severe character, and tend to fatal result.

In their treatment, the thoracic disease demands most urgent attention; but it must be borne in mind, that the disease of the alimentary canal tends still further to depress the power of life; and we must not add to the inflammation there existing, by the administration of powerful drastic purgatives.

CASE CXXII. *Burn. Muco-enteritis. Small intestine diphtheritic.*—Jesse A—, æt. 3, admitted February, 1855. The child was burnt superficially on the arms and legs, not on the trunk. She lived fourteen days; there was no diarrhœa, but there was slight erysipelatous blush on the legs.

There was no organic disease of the chest; no ulceration of the duodenum; some ecchymoses of the pleura, &c. In the ileum, the mucous membrane, near the cæcum, was very much congested, and covered with mucus, and partial delicate layer of lymph diphtherite. There was a similar condition of the cæcum.

The affection of the intestine was here much less extensive, but appeared of the same kind as in the other cases, only the cæcum and lower part of the ileum were affected. The mucous membranes of the respiratory passages were much more diseased in the instances which follow.

CASE CXXIII. *Dysentery. Pneumonia. Hydrancephaloid disease.*—Charles O—, æt. 32, admitted June 26, 1854, in an unconscious state. He was a blacksmith at Brixton. About six months ago, whilst at work, was said to have been seized with a fit, which deprived him of speech for half an hour, when he returned to his work. Has since suffered from his head. At times he is very sleepy and unable to work, at other times rather excited, and his speech affected. He continued more or less at

work till ten days before admission, when he seemed quite lost, and he was taken home from his employment. He complained of his head and giddiness, and was said to be suffering from inflammation of the brain, and was bled. His symptoms increased, and when admitted his mind seemed quite gone; he spoke incoherently—threw his arms and head about. He placed his hand on his head, as if he suffered there. He was very pale, which was attributed to loss of blood; the pupils were dilated, and he had dysenteric diarrhœa. For the next seven days he gradually became prostrate; he seemed for a moment raised to consciousness, and then relapsed into an insensible condition.

July 3. Recovered his mind, and spoke sensibly; the right pupil contracted, the left dilated; appeared paralyzed; continued sensible till his death, on the 5th.

Inspection, eighteen hours after death. Brain.—There was an increased amount of clear serum throughout the membranes of the surface and brain. The brain substance was very pale and watery, its weight 2 lbs. 14½ oz.; no tubercle discoverable. The ventricles contained excess of fluid, 3 or 4 drachms each; the central parts were not softened; the microscope showed no inflammatory corpuscles. There were a few purpurous spots on the pleura. The lower lobe of the right lung was in a state of red hepatization; heavy, soft, and œdematous. Both apices contained a few groups of tubercles.

Heart healthy. The whole of the large intestines, from the cæcum to the rectum, were in a state of acute inflammation. In the transverse colon were isolated ragged ulcers; these were close together in the cæcum. The sigmoid flexure and the rectum had the whole surface ulcerated, and covered with a thick membranous exudation; the muscular coat in some parts thickened. Spleen and liver healthy; kidneys large and coarse; bladder presented a few spots, purplish in colour and ulcerated in the centre.

CASE CXXIV. *Diphtherite of cæcum and colon. Bronchitis. Pneumonia. Cirrhosis.*—Charles G—, æt. 34, admitted March 8th, 1854. He was a tall man, of dark complexion, and not temperate in his habits of life. For three years he had served as a soldier in the East Indies. Five days before admission he was taken ill, with febrile symptoms, cough, pain in his side, and dark-coloured expectoration; dropsical effusion came on, and subsequently jaundice. When he was first seen he was prostrate, comatose and restless; the lips dry and cracked; there were sordes on the tongue; the skin was hot and dry, and slightly jaundiced; pulse, 156. There were symptoms of pneumonia, pain was produced by pressure on the abdomen, and there were a few petechial spots. He became more comatose before death.

Inspection, eight and a half hours after death.—The body was jaundiced; numerous spots of purpura were observed on the surface of the body, and on the leg was a chronic ulcer. The trachea and right bronchus were granular and congested.

The lungs did not collapse; the right was covered with a delicate layer of lymph, the lower lobe granular, consolidated, and of a yellow colour at the lower part. Left lung healthy, but its lower lobe much congested. Over the left ventricle was an old adhesion, about the size of half a crown; the heart thirteen ounces in weight; its cavities filled with fibrin and blood, its valves and muscular fibre healthy. The whole of the mucous membrane of the stomach, ileum, cæcum, and colon, were much congested; this at the cæcum and colon became intense, and the folds were everywhere covered over with a delicate diphtheritic layer. The liver was covered with false membrane; it was contracted, partially cirrhotic, and very firm, much congested with bile. Gall-bladder contained 3ss of bile. Spleen, large, soft, and pale, weighing 2½ lbs. Kidneys large, and much congested.

CASE CXXV. *Inflammation of colon. Rectum. False membrane. Superficial ulceration, &c. Pneumonia.*—James S—, æt. 20, a labourer on the Sydenham railway, who lodged at Norwood; his habits had been temperate, and his general health good; he was brought to Guy's, July 18, 1855. One month previously he had been wet through, and experienced pain in his head and back; one week afterwards cough came on, and mucus was expectorated with blood, and these symptoms increased till admission. His countenance was anxious and flushed, his pupils dilated, the skin hot and dry, the tongue was covered with a thick fur; the expectoration was viscid, tenacious, yellow, and rust-coloured; pulse 90. He was greatly depressed, lying on his back, and having tremor of the hands and tongue, with occasional delirium. He had severe diarrhœa; there was dulness on percussing the chest,

especially at the left lung, and general submucous crepitation. He had the appearance of a person affected with typhoid fever, but without the cerebral oppression. Inf. serpentariæ 3j; spir. ammon. arom. ℥xv; tinct. camph. comp. ℥xx; 4tis horis sum. Pulv. Doveri gr. v; hyd. c. cretâ gr. ij; om. nocte sum.

July 19th. There was the rusty expectoration of acute pneumonia; the cough was frequent, and the delirium continued as before, so also the diarrhœa. Mist. cretæ.

July 20th. The diarrhœa less, the tongue covered with a thick brown fur. Rept. pulv. nocte manequæ.

July 21st. The symptoms of pneumonia continued. Pulv. Doveri gr. v; hyd. c. cretâ gr. j, ter dic. Rept. mist. serpentariæ.

July 23d. The right apex was more free; expectoration yellow and rusty; the tongue less furred; the patient exceedingly prostrate. Rept. pilula nocte manequæ; et mist. Wine, 3viij.

July 24th. Greater exhaustion; low muttering delirium. Pulv. Doveri gr. x; hyd. c. cretâ gr. j, om. nocte. Rept. mist.

The prostration increased, and the patient gradually sank; he died August 3. There were no maculæ on or after admission; the diarrhœa did not continue after the first few days, nor was any blood discharged with the motions.

Inspection, August 6.—The body was of moderate stature but spare, the face wasted; decomposition moderately advanced. *Chest.*—On the right side there was effusion of fibrin on the pleura, and about a pint of bloody purulent serum. The lower lobe of the right lung was compressed, the upper rather fleshy; the left pleura also was quite free from adhesions; the lower lobe was in a state of pulmonary apoplexy, the upper part of the same lobe very much congested and slightly consolidated; it sank in water. The bronchi, trachea, and larynx were healthy, but stained by post-mortem exudation; the bronchial glands did not appear diseased. *Pericardium* contained several ounces of bloody serum; the heart flabby, but otherwise healthy. *Abdomen.*—Moderately distended; the peritoneum was smooth and healthy: the stomach presented advanced gastric solution, the mucous membrane at the cardiac extremity being exceedingly thin; the small intestine contained yellow bilious fluid feces; in the last foot of the ileum the mucous membrane was gray, Peyer's patches slightly raised, and in a few parts presented irregular ulceration; they had not, however, the raised swollen appearance common in typhoid fever. The cæcum contained several small ulcers, and the whole mucous membrane was of an iron-gray colour; the edges of most of these ulcers were smooth and contracting; the mucous membrane was thickened. In the transverse descending colon and rectum, the whole of the mucous membrane had a swollen, œdematous, and almost villous appearance; this was most marked towards the rectum. Studding this swollen membrane were white patches of adherent lymph, in some parts merely constituting a thin, delicate, but adherent membrane, in others, forming a large flocculent mass

Fig. 8.



Appearance of inflamed colon; (a) false membrane composed of granule cells; (b) surface of a portion of colon beneath false membrane; (c) follicle or crypt containing cells similar to those composing false membrane.

about $\frac{3}{4}$ of an inch in length, firmly adherent to the membrane; there were numerous small ulcers scattered over these portions of the intestine; some with smooth margins, others irregular and injected; some containing a small portion of false membrane, like a slough: from others large masses of false membrane could be detached. On

tearing off portions of this membrane, an injected granular surface or superficial ulceration was observed. The submucous cellular tissue was white, thickened, and œdematous; the muscular coat contracted and distinct, nearly one-eighth of an inch in thickness; the mesenteric glands were enlarged. On carefully examining portions of the false membrane, it was found to consist of granular cells closely matted together with very little blastemas; the cells were large and full of granules, some contained a faintly marked nucleus; scarcely any columnar epithelium was observed. On examining the mucous membrane itself, small excavations were found to contain similar cells. (Fig. 8.) This diseased condition had led to the effusion of a blastema, and to the production of cells, instead of the ordinary columnar epithelium; the follicles and solitary glands had become inflamed, and a subsequent condition of this action produced superficial ulceration. It was of an inflammatory character, and not only the follicles and glands, but the whole surface of the mucous membrane were affected; the effused membrane appeared more cellular than that sometimes observed.

The liver and kidneys were healthy, but partially decomposed. The symptoms closely resembled those of typhoid fever or typhoid pneumonia. The irritation of the large intestine, as indicated by the diarrhœa, appeared to be checked by the Dover's powder which was administered. The administration of alcoholic stimulants in a case of this kind is a question of great difficulty; the general symptoms, failing pulse, subsultus, &c., appeared to indicate the free administration of stimulants.

This case strongly favoured the idea of a constitutional origin of the disease, resembling, if not identical with typhoid fever.

III. Another class of cases are those where chronic disease has slowly advanced—it may be for months, or years—and in this state acute inflammation of the alimentary canal is set up, and in a short time leads to fatal termination. Cases of this kind are not of unfrequent occurrence, in which a patient is already broken down, as by incipient phthisis; there is already a disposition to the ulcerative disease of the small intestine, so common in phthisis, when, probably from fresh exciting cause, acute inflammatory disease is set up; and diarrhœa, which can scarcely be checked by any means, is rapidly fatal. This inflammation, and the effusion of false membrane, may be confined to the rectum or descending colon, or be found in the cæcum or ileum. (*See Strumous Disease of Intestine, Cases LXXXI.—LXXXII.—LXXXIII.*)

In Case IX. of perforating ulcer of trachea and œsophagus, the rectum was acutely inflamed, but this appeared to have been produced by the direct irritation of the nutrient injections, by which life was entirely sustained for six weeks.

CASE CXXVI. *Strumous peritonitis. Diphtherite of rectum. Chronic inflammation of the large intestine. Tubercular lung. Simple ovarian Cyst. Vascular excrescence of urethra.*—Esther W—, æt. 37, admitted Oct. 25, 1854. She menstruated regularly till eight months ago; and two months afterwards perceived enlargement of the abdomen; this increased gradually with pain: the swelling appeared to proceed from the right side. Nov. 20. Six quarts of purulent fluid were drawn off by tapping; after a few days, sickness and diarrhœa came on, which continued more or less until death.

The body was extremely wasted; the eyes sunken; the abdomen projected as a large round fluctuating tumour. Both lungs were closely adherent to the chest; they contained large masses of tuberculo-pneumonic deposit; scattered groups of tubercle in both lung. In the upper lobes the tubercles were associated with indurated puckered lung and cretaceous matter. Heart small but healthy.

Abdomen.—The parietes adherent to the cyst, which contained about a gallon or more of fluid. The intestines were adherent to one another, and presented here and there white tubercular masses; the greater part of the small intestine was behind

the tumour, but about two feet of jejunum were closely adherent to the upper and anterior surface of the cyst. Throughout the large intestine were raised, rough, and hardened patches of mucous membrane; and in the centre of these patches the mucous membrane was destroyed. The margins of these ulcers presented imperfect gland structure, with a considerable quantity of fibrous tissue; in the centre was fibrous tissue, but no gland structure. These ulcers covered a considerable portion of the large intestine; the whole of the submucous tissue contained white fibrous tissue. In the intervening portions of membrane were several raised minute tubercles, about the size of an ordinary pin's head, one-eighth of an inch in diameter; these were red in colour, and appeared to consist of injected and fibrous tissue beneath the mucous membrane, not true tubercle.

The rectum was intensely injected, and covered with a whitish layer of secretion, firmly adherent to the mucous membrane. This diphtheritic membrane consisted of granules, of mucous cells, columnar epithelium, some imperfect granule cells, and slightly fibrillated secretion.

Some of the mesenteric glands contained strumous matter. The liver slightly fatty, 3 lbs. in weight; there was a large gall-stone of cholesterine in the bladder. Spleen corpuscles large.

The ureters were much distended: the kidneys diseased from obstruction; pelvis distended; the cortical structure full of white deposit, in some points suppurating. The left kidney larger, and containing small abscesses. Bladder distended; at the orifice of urethra was a vascular growth. The ovarian cyst simple; Fallopian tube extended upon it, and was filled with strumous deposit; ovaries obliterated; the ovarian cyst contained purulent serum and fibrin. The uterus and its cervix were much elongated.

The fatal termination in this severe case was much hastened by the ulcerated state of the colon; there was strumous disease of the abdomen and of the lungs, and it is probable that the exhaustion consequent on the suppuration of the ovarian cyst led to the rapid development of strumous disease. It is important to guard against each fresh accession of diseased action, because the changes are of a rapidly degenerative character, and react upon the original disease.

CHAPTER XI.

ON TYPHOID DISEASE OF INTESTINE.

IN typhoid fever we find a special diseased action taking place in the glands of the intestine. This state passes through very definite conditions, and has been described as the typhoid process by Rokitsansky. Dr. Jenner, and others, have pointed out the essential difference in the signs of typhoid and typhus fever, and it is only in the former that we find this abnormal condition. The glands especially thus affected are those at the lower part of the ileum—Peyer's or aggregate; the solitary also become involved, the mesenteric are enlarged, congested and swollen. The question naturally arises, In what does this state consist? is it a necessary sign of fever? what are its indications, and the course it pursues?

It consists in the effusion of an abnormal product into the substance of the glands, an exudation apparently from the capillary vessels, composed of a blastema, which undergoes but little development, consisting of an immense aggregation of granules, and of some large cells containing nuclei.

With the commencement of the fever the glands appear to be swollen and enlarged, and the mucous membrane more vascular than usual; as the fever advances the glands are raised above the surface of the membrane, sometimes two or three lines in height; about the fourteenth day of fever the product either becomes absorbed, or ulceration takes place, or the gland sloughs; a few days later the slough is found to have separated, and an irregular ulcer occupies its position; the muscular coat is exposed, the margin of the ulcer is ragged and congested. If the patient do well, this ulceration, of greater or less extent, gradually heals, a cicatrix is formed, and the health is slowly restored, the convalescence extends over several weeks, interrupted, it may be, by relapses consequent on this condition of the intestine. They are the glands nearest to the ileo-colic valve that are most severely affected; sometimes the whole valve itself is converted into a slough, and the disease extends to the glands in the cæcum.

The mesenteric glands slowly assume their normal condition, or, in other instances, the hyperæmia thus induced tends to the effusion of unorganizable strumous product.

In the examinations of the intestines after death from fever, we find the process in various stages, the glands merely swollen, or raised; or the sloughing process commencing in small patches; or the whole glands are converted into sloughs, partially detached,

and stained by feces; the glands nearest to the cæcum may be in this state, whilst others further removed from that part are, in earlier stages of the same process, beginning to slough, or merely swollen and raised. In some cases, where death has taken place several months after fever, we have found cicatrices, but no ulceration; the disease was repaired. A very interesting case of this kind occurred at Guy's, under the care of Dr. Gull. A young man was admitted, having the ordinary symptoms of typhoid fever, with the indications of ulceration of the intestine; he appeared to convalesce favourably, but about three months afterwards he was seized with typhus, and died in a few days. On inspection there was no injection of the mucous membrane of the ileum, but only cicatrices.

As a consequence of this diseased action the whole of the mucous membrane becomes inflamed, and even the deeper tissues; the intestine becomes distended from enfeebled muscular power, the peritoneum is injected, and presents in many cases delicate exudation upon it; or not only does the mucous coat become ulcerated, but the muscular, till at last only the semi-transparent peritoneum is left; this also in many instances sloughs, and a minute opening takes place into the peritoneum, leading rapidly to fatal peritonitis.

Strumous disease not unfrequently follows fever, as we have mentioned in reference to the mesenteric glands; tubercles are deposited in the substance of the mucous membrane, and ulceration follows, or phthisis, or strumous disease of the peritoneum takes place. These are not necessary sequences, but may follow in the train of the exhaustion caused by fever.

The indications of ulcerated intestine in fever are, in addition to those of fever itself, the dry hot skin, the excited or depressed pulse, the parched lips, and injected, furred, or dry tongue, the excited or oppressed brain; in addition to the maculæ, we find that the abdomen is full and rounded, that on pressure in the region of the cæcum there is a gurgling sound produced, and may be pain; there is diarrhœa, but not necessarily; sometimes the bowels are confined, or if the ulceration be very severe, there is diarrhœa of loose ochrey motions, and often containing blood; the pulse is depressed, the tongue injected, and becoming dry or cracked; there is often a circumscribed flush on one or other cheek; the brain, too, is more depressed than in other cases. If perforation takes place there is sudden severe pain in the abdomen with collapse, and death generally ensues in five, eight, or ten hours.

The symptoms of typhoid fever are sometimes so slight, even with existing ulceration of the intestine, that the patient is able to walk, and does not appear much enfeebled. I well remember a case of this kind, attending, and continuing to attend as an outpatient at Guy's for three weeks, under the care of one of my colleagues. About the twenty-third day, a short time after admission into the hospital, when I first saw him, perforation of the intestine had taken place into the peritoneal cavity, and death quickly fol-

lowed; and in other cases, where the severity of the fever is passed, and the patient apparently beginning to convalesce, having regained power and mental energy, after some indiscretion of diet, or attempt to move from the bed, perforation takes place, and the bright beaming hope of returning health is lost in the terrible foreshadowing of speedy death. These are painful cases, trying to the physician, who has encouraged the hopes of the patient and his friends, and still more to those who are thus deprived of kindred. Perforation takes place from the third to the sixth week, and they should caution us to use the greatest care in allowing changes of food, or increased muscular movements; among fatal cases of typhoid fever a large majority die from this cause.

The general symptoms and treatment of fever, and the question whether there be any essential difference between typhus and typhoid fever, are not within the sphere of this work: the able manner in which they are discussed by Drs. Stewart, Jenner, Wilks, Peacock, &c., and earlier by Bretonneau, Louis, Broussais, Chomel, Christison, &c., render it unnecessary, and I must refer to their treatises.

Treatment.—The question may, and has been raised, how far diarrhœa is beneficial, and whether we ought at once to check it? We may be assured that purgatives are injurious, especially those of an active or drastic character. The disease of the intestine has been often aggravated by the injudicious administration, in the early state, of jalap and scammony, senna, and the like; so also mercurials tend not only to increase the subsequent depression, but to aggravate the ulcerative action. It is often beneficial to act on the bowels by a mild mercurial purge, where there is disorder of the abdominal viscera, or of the liver, but all irritation of a prolonged kind must be avoided. Where the diarrhœa is continued, it is well to check it by enemata of starch, or by the administration of chalk with opium, or vegetable astringents. Where hemorrhage takes place, the acetate of lead is sometimes of service, or vegetable astringents, as kino, catechu, logwood, &c.

We must strongly urge extreme caution in the return to solid and highly nutritious food; and equally important is it, that during the severity of the fever, and for many subsequent days, no muscular exertion should be attempted, but absolute rest in the recumbent position maintained. The attention to these means would have saved many valuable lives; and few diseased conditions require such constant watchfulness in the maintenance of rest, and the frequent administration of mild nutritious aliments.

Ammonia and serpentary may be given to stimulate the heart's action; in some, quinine proves of service, especially where there is any sign of miasmatic influence. The judicious administration of wine is one of the most difficult questions in practice; many are benefited by it, whilst others appear to do well without it; a failing circulation, especially in advanced life, or with an enfeebled constitution, requires it.

CHAPTER XII.

ON COLIC.

By the term colic we mean a severe twisting pain in the abdomen, about the region of the umbilicus, and without inflammatory action, generally with constipation, but sometimes with looseness of the bowels and vomiting. Internal strangulation of the intestine and intussusception are considered as more aggravated and severe forms of colic: but the former is often in its early stages altogether free from pain, till distension and violent peristaltic action set up inflammation, which involves all the coats of the intestine; unless, then, we consider some forms of colic to be free from pain, in some of its stages, we cannot regard fatal obstruction, arising from displacement and internal strangulation, as a form of the disease.

Dr. Copland divides colic arising from functional disorder of the bowels into four classes:—

1. Flatulent, nervous, or spasmodic colic.
2. Colic from injurious character of the food.
3. Colic from morbid secretion, or retained excretions.
4. Colic from lead.

This division appears a just and a useful one; for they indicate widely different conditions, and require different treatment.

In *flatulent* colic the intestines become distended with flatus; severe twisting pain arises round the region of the umbilicus, the patient becomes cold, and a clammy sweat breaks out, if the pain be severe; the pain extends to the back, and is relieved by its removal to another part, but especially by the eructation of flatus, or its discharge from the rectum; during the severity of the pain, the pulse becomes depressed, feeble and irregular.

In nervous and spasmodic colic there is some distension of the abdomen; it may be slightly tympanitic, and the pain extends more to the sides and to the back, and sometimes is situated across the chest. The removal of pain from one part to another affords relief, but especially the discharge of flatus. The abdomen is, however, tolerant of pressure and pain, and is occasionally relieved by this means. There is, also, anxious expression of countenance, coldness, and clamminess of the surface, and depression of the pulse, if the pain be severe. The collapse has been even mistaken for ruptured intestine, so complete may be the prostration, which, however, will entirely disappear in a few hours. The tongue is not generally

affected in these attacks; it may be perfectly clean or furred; and the evacuations from the bowels may be as in health, but in most cases will be found deviating from their normal condition. In the nervous colic of hysteria, the urine is abundant and limpid. In the spasmodic colic of gout, the urine contains an excess of lithic acid, and may be turbid and scanty.

Causes.—This form of colic is observed in the nervous and hysterical, and is produced by the rapid evolution of gases from the contents of the alimentary canal, and in some cases appears to arise from change in the secretions of the mucous membrane itself. In the intemperate, the chylopoietic viscera are in a congested, often morbidly excited state, and a very trifling cause will produce intense colic.

So also in gout, intense spasmodic colic is brought on by a very trifling exciting cause. In patients reduced by exhausting diseases, by loss of blood, or by too long continuance on farinaceous or fluid aliments, we find colic readily induced, so also in lactation.

As to the exciting causes, alarm, or fright, exposure to cold and wet, especially of the lower extremities, food not itself indigestible, but taken when the powers of digestion are diminished, from an enfeebled condition, or the state of the nervous system.

Diagnosis.—There are several conditions with which this functional colic may be mistaken, and which are important to remember.

Perforation of intestine coming on after food, but known generally by the intensity of the collapse; it is exceedingly unusual to have collapse at all approaching that produced by ruptured intestines arising simply from colic, but that is sometimes the case.

Gall-stone or renal calculus: with these, though the pain is intense, there are other diagnostic symptoms, the position of the pain, the vomiting, the pain and retraction of the testicle, and in the latter, blood in the urine.

In disease of the spine, or aneurism, severe and sometimes intense pain is produced in the abdominal parietes, but this pain has less of the twisting pain of colic, and may be traced in the course of the spinal nerves.

In peritonitis there is exquisite tenderness of the abdomen, while in colic it rarely amounts to more than a diffused soreness, and will often bear pressure.

In strumous and chronic peritonitis we sometimes find flatulent distension of the abdomen, associated with soreness or tenderness, less severe than in ordinary peritonitis, and which we may, in the *early stages*, mistake for simple colic; this is important, because by an over-active plan of treatment we may accelerate the disease; afterwards, when the intestines are matted together, and attacks of peritonitis are set up, the pain and tenderness come on in severe paroxysms. It is only in the early conditions of this disease, and especially in young people of nervous and excitable temperament, that there is liability to such mistake.

The distinguishing marks between colic and hernia, or intussusception, need not be dwelt upon. Flatulent distension of the stomach is sometimes a severe and even *fatal* disease, but the distension is great, and the pain constant. The intense pain arising after poisons, as after arsenic, oxalic or mineral acids, &c., is associated with violent vomiting, and has other characteristic symptoms.

Our *prognosis* in colic of this kind is generally favourable, but must be much more guarded where we have had evidence of previously existing disease, or where the collapse is great, or again in some cases of gout.

Treatment.—The ordinary treatment, often before the patient is seen by a practitioner, is to administer some hot brandy and water, and often with the effect of relieving the patient; this may be well, if the disease be simple colic of the kind we have been describing; but in peritonitis, in hernia, in perforated intestine, nothing can be worse, and it takes from the patient his chance of recovery. Opium or laudanum are the most useful of remedies, gr. j or ij, or xx to xl drops, either alone or with ether; or chloroform, gr. v to x or xv, with gr. iij or iv of camphor, or alone in mucilage mixture. Warmth should be applied to the abdomen, and sometimes a mustard poultice, or a hot flannel sprinkled with turpentine.

If the bowels are inactive, or have not been relieved for several days, where at the same time we have no indication of inflammation, hernia, or internal obstruction, we may administer a warm saline purge, or gr. v to x of calomel, with gr. j or ij of opium. Again, injections are sometimes here of much service in emptying the colon, and entirely relieving the disease—an injection of castor oil, or the turpentine injection; or what has frequently been of great service, an injection of rue.

If the attacks be less severe, but repeated, it is well to administer the compound galbanum pill, or aloes and myrrh; and if the patient be exhausted or anæmiated, we may combine steel or quinine with those just mentioned, and with great benefit. At the same time many of the vegetable bitters, calumba, cascarilla, gentian, may be prescribed with the aromatic spirit of ammonia, with henbane, with the carbonated alkalies, with soda, potash or magnesia, or musk, valerian, &c. The essential oils are less effective, though they often afford speedy relief.

The strict attention to diet, that it be of a form easily digestible, but sufficiently *varied*; not too bulky, but still not entirely in a fluid form, is essential.

Some are much better without any alcoholic liquors, especially where we have a gorged portal system, from an excess of aliment or of stimulants; but this abstinence from stimulants is the more difficult to attain, because we find that the colic is itself relieved by fresh doses of ardent spirits. So in gout, an excess of animal food and of stimulants aggravates the disease, although the patient may

be so enfeebled that it is hazardous at once entirely to relinquish the latter.

In cases of exhaustion, from over-lactation, loss of blood, great mental alarm, alcoholic stimulants are of great value.

2. Colic arising from the *injurious character of the food*. This has many symptoms in common with the colic just described; its cause is different, and also its mode of relief.

Severe pain comes on in the region of the *scrobiculus cordis*, or umbilicus, two or three hours after eating; sometimes with flatulent distension, but in varied degrees. There is occasionally vomiting, and it may be, if the food is of an injurious character, either in itself or from the idiosyncrasy of the patient, that diarrhœa is set up. The tongue is whitish and furred, or injected papillæ are observed through this fur, or it is injected at the tip and edges. The pain is followed by a soreness of the abdomen, which may persist for several hours or days. The pulse is depressed, and the respiration less free than normal. This condition may pass into that of enteritis, or of diarrhœa; or, after vomiting, or disturbed unhealthy evacuation, the patient may be restored to health.

It is often associated with disturbance of the cerebral function, severe pain in the head, dimness of sight, irritability of temper. Or it may set up disturbance of the skin, producing urticaria or roseola; or in children, strophulus, or other lichenous eruption.

If the injurious character of diet be persisted in, the colic may cease, but other conditions consequent on general impaired nutrition be set up; as the forms of struma, &c. The exciting causes are salads, cold drinks, raw fruit, especially stone fruit, mussels or other shell fish; or it may be that the food is imperfectly masticated, either from the inefficient means or that time is not allowed for the partaking of it; this is especially the case in those engaged in active business, or where the meal is postponed till the frame is almost exhausted.

Colic of this kind is sometimes produced by mushrooms, especially where other forms than the edible *agaricus* are taken; but this, from the severe character of its symptoms, may be considered as a poison, and is treated of in works on Toxicology.¹ It is sufficient, however, to be on one's guard in reference to such causes.

In other cases the diet may be perfectly proper in itself, but improperly administered; thus the most severe colic may be produced by giving to young children cold milk, either on account of its temperature or quantity, the secretions perhaps not being in a perfectly normal condition. Sudden prostration of strength, pain, sunken eye, vomiting, and afterwards diarrhœa are produced in the child, and the motions indicate the undissolved state of the food taken. The colic consequent on acid fermenting wines is of this kind, and has close similarity to lead colic.

In the *diagnosis* of these cases, what we have said in reference

¹ Taylor on Poisons. Christison on Poisons.

to flatulent colic must be borne in mind; but here it is additionally necessary to remember that hernia, perforation, peritonitis, intussusception, or enteritis, may produce many of these symptoms. To distinguish from the first, ordinary care will in most cases be all that is needed; the pain of peritonitis and of perforation is more severe in kind, and different in character. This form of colic may itself produce enteritis or intussusception; and in reference to poisons, very great care is necessary in well ascertaining the history, and in the examination of the vomited matters.

Treatment.—If vomiting have come on, and irritating matters have already been freely ejected, we may give soothing demulcents; but if pain and nausea continue, an emetic is often of signal service. This should be followed by saline aperient medicines: carbonate of magnesia, or sulphate of potassæ, tartrate of soda, or a free calomel purge; afterwards such demulcents as arrowroot, milk, rice, &c.; or the administration of salines, as liquor potassæ, or chalk, with antispasmodics, or sedatives, conium, hyoscyamus; opium may be required to check the irritated action which has been set up.

3. Colic from retained secretions, or morbid excretions.

The severe pain that we find in diarrhœa, associated with dark bilious evacuations, appears to be colic of this kind, and is closely allied to the bilious diarrhœa and English cholera, which we have previously noticed. The severe pain in the region of the umbilicus may be associated with violent vomiting and purging, without being caused by any impropriety of diet. The patient sometimes becomes prostrate, the motions fluid, the surface cold, the pulse compressible, and in a very short time is brought to extreme collapse, resembling Asiatic cholera. This in its most severe form constitutes the English cholera that we find each autumn in our own country. But there are much less degrees of this condition: the vomiting, pain and purging, may be more moderate, the tongue furred and injected, but the prostration less. Again, in other instances we have severe pain in the abdomen of the character of colic, without any purging or vomiting, but with a sallow complexion, furred tongue, pain in the head, oppression of the mind, and impaired physical energies.

In some cases the prostration is so severe that the patient succumbs; but more generally, I may say in most cases, the symptoms gradually subside, and are followed by speedy recovery.

Predisposing causes.—In the autumnal season there is much greater liability to this disease, from the sudden transition from the heat of summer to the cold evenings of autumn. The exhalations from decaying animal and vegetable produce, effluvia from drains, &c., cause this disease. So also in the intemperate, the portal system becomes congested, and a slight exciting cause will induce this condition. In miasmatic districts, and in damp localities, there is much greater liability to this state. So great may be the predisposition, that a very slight excitement is sufficient to set up the disease.

In infants it is exceedingly common to have colic from retained or morbid secretions. There is evidently pain, as shown by the drawing up of the lower extremities, crying, often almost incessantly, green or watery evacuations containing portions of coagulated milk or undigested food; the countenance anxious. If this condition continue, it extends so as to affect the mucous membrane of the stomach, and is then associated with violent vomiting, and, it may be, the rejection of all food. In this condition rapid prostration may ensue, and death, or more slow muco-enteritis or intussusception; or, in some older children, a less serious but a troublesome disease, prolapsus ani.

In the diagnosis, we must bear in mind the remarks made in reference to the other descriptions of colic; and in the severer forms it approaches the character of Asiatic cholera.

Our prognosis must be a guarded one, for although most cases recover, still, in many, a more untoward result follows, and the patient becomes perfectly prostrate and dies.

Treatment.—It must be remembered that the effect of the vomiting and purging in these cases is to remove the offending matters from the alimentary canal, so that many cases, if left to themselves, recover. In milder cases the pain, the vomiting, and purging, are entirely removed by the administration of arrowroot, or by the injection into the rectum of thin starch. Or if offending substances or secretions are retained, castor oil, with tincture of rhubarb, or with opium, affords great relief, repeated as need be; and it is in this condition, antecedent to the aggravated forms of Asiatic cholera, that we may expect and derive benefit from the plan of treatment recommended by Dr. Johnson. Some administer magnesia, calcined, or carbonate, with a little conium or henbane, often with good effect; or hydrargyrum cum cretâ, with Dover's powder, in gr. v doses, or calomel with opium, may be given several times during the day, to remove freely these diseased contents and check the pain of the colic. If, however, the pain and diarrhœa continue, it is well to give absorbent alkaline medicines, with astringents, chalk with catechu and opium, or kino, krameria, logwood, tormentilla, &c., and to repeat the starch injections, or injections of oak bark, &c.

In the subsequent prostration, mineral acids, the sulphuric, nitric, hydrochloric acids, with vegetable tonics, are of great service in restoring tone to the mucous membrane. The sulphuric acid has been much used in the diarrhœa arising in this way; we have already alluded to its use. The secretions from the mucous membrane of the small and large intestine are of an alkaline character, and when the membrane is irritated are poured out in greater quantity, forming an unusually thick covering to the membrane; in this state the mineral acids correct their character by their astringent effect on the capillaries, checking the further secretion of watery mucus, and they assist the removal of that already formed.

Liquor potassæ, and alkalies generally, have a more soothing influence upon the mucous membrane of the alimentary canal, and I think are of greater service in the early stage of colic and diarrhoea from offending secretions.

If there be persistent pain, the application of leeches to the abdominal parietes, or to the anus, and warm applications to the surface, afford relief.

Food should be very sparingly administered, and only of the most bland form, amylaceous, as arrowroot, rice, tapioca, &c., veal or chicken broth; if the strength fail, we must add brandy, or port wine, &c.

4. *Lead colic.*—Till attention was drawn to the subject of lead poisoning, the colic arising among the wine and cider districts was attributed entirely to the character of the fluids drunk; this has still been shown to be in a great measure the case, although since the observations of Sir George Baker, the effects of poisoning by lead in its several forms have been completely verified, and we are now able to distinguish the effects of lead poisoning with, perhaps, more ease than almost any other form of disease.

The patient exposed to the influence of lead becomes of a sallow anæmiated aspect, his muscular development diminished, and his mental capabilities somewhat enfeebled; he experiences severe pain in the abdomen, at first moderate, but afterwards becoming of a very intense character, twisting and grinding about the umbilicus, the abdomen is contracted, and the patient experiences relief by firmly compressing the abdomen with his hands, or even across a chair; the bowels are obstinately constipated, the abdomen is not tender or hot, but hard and contracted; nor is there generally any vomiting, but the patient writhes with the severity of the pain; the tongue may be clean or furred, the pulse feeble, but not increased in frequency, the urine pale. After some hours the severity of the pain subsides, but may again return during the next night, or after taking food. The severe colic sometimes is accompanied by cerebral disturbance, but this is a rare occurrence, although severe cephalalgia or epilepsy may precede or follow colic, as another of the effects of the lead poisoning; or the colic may be associated with severe cramps and pains in the extremities; the constipation sometimes gives place to diarrhoea, but still the pain continues, or rather, severe soreness, occasionally aggravated into intense pain. On examining the gums we find along the edge a gray line, composed of minute particles of sulphuret of lead, from the mutual decomposition of the lead permeating the capillaries and the sulphocyanide of the saliva. This is itself a very distinctive sign of lead poisoning, and where the pain is unaccompanied by tenderness is sufficient to guide us to a correct diagnosis. It is rare that lead colic alone terminates fatally, unless associated with other diseases or conditions of lead poisoning. In a case to which I have referred in diseases of the stomach, lead colic was associated with chronic

ulceration of the stomach, which led to perforation and fatal result. We sometimes find the paralysis of the hands or wrists, and epilepsy, coincident with the colic; it is very rare to have paralysis of the ankles, but such I have seen in a woman, under Dr. Hughes' care, in Guy's.

The proximate cause of lead colic is not known, whether irregular peristaltic action, or paralysis of one part, and spasmodic contraction of another, is produced. In those cases which I have seen examined, and in others recorded, no abnormal appearance was found in the intestine. The manner in which the lead enters the system is, in some cases, very obscure, but generally sufficiently manifest: drinking fluids from leaden vessels which are not covered with any protective carbonate, &c.; or acid drinks, as cider, &c., from leaden vessels; but it is most frequently observed in plumbers, painters, type-founders, &c., men who are constantly employed in handling lead, and breathing an atmosphere contaminated with minute particles of it. It appears probable, that in the mixture and using of paints containing lead there is still greater liability to its absorption, the volatile oil containing minute particles of the metal, and thus its ready inhalation is effected. In many instances the want of proper cleanliness in washing the hands before taking food, and in changing the clothes, very much aggravates the liability to poisoning by lead. It is sometimes, however, difficult to ascertain how lead has entered the system. Dr. Addison mentions a publican who was poisoned by lead, from drinking in the morning the ale which had remained in the leaden pipe during the night, himself having the first draught. Several instances have been known where lead was found in the snuff which the patient was in the habit of taking. It has sometimes been produced by the medicinal use of acetate of lead; Dr. Thompson showed that there was less liability to this effect being produced when it was combined with opium, or with dilute acetic acid.

The diagnosis of lead colic is sufficiently clear with ordinary caution; the lead line along the gums, with pain relieved by pressure, and contracted abdomen, distinguish the disease; but, as before mentioned, it may be associated with chronic ulcer of the stomach, with hernia, &c., which obscure the diagnosis, and may lead to a fatal result.

In lead colic alone we may give, especially in the earlier attacks, a favourable prognosis.

Treatment.—The indications of treatment appear to be sufficiently plain in this disease: to relieve the pain, act on the bowels, and remove lead from the system. For the relief of the pain, opium or chloroform is the best remedy, and may be administered freely; to act on the bowels, croton oil, or free calomel purge with opium, or castor oil and laudanum, more frequently repeated, or the sulphate of magnesia with compound infusion of roses and henbane; or we

may administer injections of castor oil or colocynth ; warmth should be applied to the abdomen.

In relation to the subsequent treatment, we should not be content merely with the subsidence of the colic, as long as the patient retains the sallow anæmiated aspect, and has a lead line along the gums. Iodide of potassium has been used, and it has been found that the urine contained a considerable quantity of lead during its administration. Considerable benefit has been found in dropped hand by rubbing iodine ointment into the paralyzed parts.¹ A galvanic current has been used, and an insulated water bath, in which the patient was placed, the patient being connected with one pole, the sides of the bath with the other. The lead is stated to be removed from the body of the patient, and deposited upon the walls of the bath. I have not seen it applied in this manner ; the only opportunity in which I have known it to be used in colic, was in the case associated with gastric ulcer, to excite the bowels to action ; the existence of gastric ulcer was not known, and fatal peritonitis followed. Warm baths, perfect cleanliness, bracing air, and preparations of steel, after the removal of lead, are of great service ; but a considerable time is required for the complete removal of lead from the system.

The prophylactic treatment is an exceedingly important consideration to those employed in its use. The importance of perfect cleanliness, of changing the clothes, of not taking the meals in the workshop, are now generally acknowledged, though too unfrequently acted upon.

A drink containing dilute sulphuric acid is mentioned by Dr. Watson, as having been used by Mr. Benson, in lead works, with very great advantage.

¹ Medical Times and Gazette, May, 1857.

CHAPTER XIII.

ON CONSTIPATION.

WASTE and repair are necessarily connected with the performance of every function of the human body; and the various excretory organs are the channels by which the materials of waste are separated from substances no longer of any benefit, and the retention of which becomes increasingly detrimental to the whole economy.

The large intestine may be looked upon as a very important excretory organ, and the removal of its contents as necessary for the continuance of human life, as the separation of carbonic acid from the lungs in ordinary respiration.

The colon is well adapted for the purposes of excretion, and by its arrangement serves as a reservoir, allowing of occasional, rather than continuous, action.

But in this periodicity of the intestinal canal there is very great difference; the variation within the bounds of health is very much greater than is usually supposed; with some, and perhaps by far the larger number, an action of the bowels takes place every day, but with another twice, each in the performance of ordinary healthy function; on the contrary with others, it may be that every second or third day is the condition of health. The usual period may be even extended to every fourth or seventh day. This condition must be borne in mind, otherwise, in the attempt to produce what is considered beneficial, an abnormal condition may be set up, and comfort and health lost in striving to bind all to the same universal law.

Much, however, may be acquired by habit; regularity may be attained; or inattention and want of care may induce a condition which will almost baffle subsequent exertions to eradicate. Premising that the healthy action of one is disease with another, we may define constipation to be the departure from the healthy standard of each individual, as regards the evacuation of the large bowel. Ordinary constipation arises from the insufficient contraction of the muscular coat of the intestine; the canal becomes more and more distended, and with each increase in the circumference of the tube greater power is required to force onward its contents. I have sometimes observed a colon so enlarged by distension and loss of power, with obstinate constipation, that it has measured more than 12—15 inches in circumference; the power required to

propel the contents must have been enormous. And it appears probable that in this extreme distension, a state closely allied to paralysis of the muscular parietes is the result; although, sometimes, this is the cause of the gradual distension, rather than the effect.

A second effect is that the lateral pouches of the colon, formed by the circular bands of muscular fibre, at one part being stronger than another, and the longitudinal layer of muscular fibres forming three bands rather than an uniform covering, become more and more distended, and being thus filled out, their contents are removed somewhat from the central current, and may remain impacted in them, while the bowels act with some degree of regularity; these impacted feces may very frequently be felt as tumours through the abdominal walls, alarming the patient, but disappearing under judicious treatment.

Pouches of the colon sometimes become of a considerable size; generally the circular fibres of the canal surround them, but not very unfrequently the circular fibres yield, and the mucous layer projects, covered only by the peritoneum, forming a more elongated sac, filled with mucus, or more frequently feces. The orifices of these small sacs are bounded by the hypertrophied circular and longitudinal fibres, and their contents remain almost shut off from the intestinal canal. These pouches are the result of constipation, the muscular fibres become hypertrophied, but their effort to propel onward their contents leads to these minute hernial protrusions.

I have most frequently observed them in connection with the sigmoid flexure; but they, probably, occur at any part where the longitudinal fibres form a triple band rather than an uniform layer. In one case they were situated about every half-inch, forming a double row on each side of the colon. No muscular fibres could be detected in several of them, beyond the immediate vicinity of the mouth of the sac, but merely mucous membrane, submucous cellular tissue, fat and peritoneum. These pouches do not appear to produce any symptom, or lead to dangerous result.

CASE CXXVII. A remarkable case of this kind I observed in a patient, aged 62, who died from cancerous disease of the liver and lungs, bronchitis and emphysema. The sigmoid flexure and rectum were contracted, and presented numerous pouches, some of which were half an inch in length; they were arranged in two rows about one inch apart: these pouches consisted of mucous membrane and peritoneum; the circular muscular fibres were placed between the pouches, and the longitudinal fibres on either side, and both were hypertrophied. The pouches were filled with mucus and feces. There was no ulceration or evidence of cicatrix, but it appeared that the constipated bowels to which the patient had been subject had led to unequal pressure and saccular distension, or herniæ of the mucous membrane. Appearances of this kind, though in less degree, are by no means uncommon in the colon, especially towards its termination. Continued distension with solid contents alters the position of the colon: this is especially observed in the transverse colon, and in the sigmoid flexure; the convexity of the former becomes much increased, and the double curve of the latter more evident.

The attachment of the great omentum, and the ready separability of its layers, are especially designed to allow of free distension of the transverse colon, but a continued pressure increases the curve, till at last it may form a large sigmoid curve, reaching nearly to the brim of the pelvis.

The most important result arising from continued constipation is the retention within the blood, or the reabsorption of materials essentially excrementitious. The excrementitious portion of the bile is not removed, and the function of the liver imperfectly performed; the blood of the whole portal system is rendered more or less impure; the complexion becomes changed, sallow, muddy; the brain does not act with its wonted energy, and there is a manifest diminution in the elasticity of the whole mind and body; hence the other functions become disordered, and the enlarged and distended colon mechanically interferes with the healthy action of adjoining viscera.

The cæcum and ascending colon may press injuriously upon the ilio-hypogastric and genito-crural nerves, leading to severe neuralgic pain over the crest of the ileum or groin; pain of this kind may be mistaken for rheumatism, lumbago, &c., and entirely disappear when mechanical pressure on the nerves has been removed. This pressure is, however, more frequently exerted on the left side by the sigmoid flexure; the veins of the lower extremity and the testicle or ovary becoming pressed upon, and œdema of the feet, and varicose veins result: at the transverse colon the stomach is interfered with, and its movements to a certain extent crippled.

In reference to the causes of constipation, the first to be mentioned is original peculiarity of habit, or idiosyncrasy; that such peculiarity does exist cannot, I think, be doubted, although it must not be considered as disease in the same light as constipation arising from organic change.

2dly. Causes connected with the condition of the abdominal walls. The contraction of these muscles is an important aid in defecation, and their tonic contraction equally so in assisting the peristaltic action of the intestines. One reason of the constipated condition of the bowels in diseased or fractured spine arises from this cause, namely, paralysis of these muscles; but diminution of contractile power also shows itself in degeneration of the muscles themselves, in excessive development of fat, and sometimes where the contraction of the muscle is accompanied with pain, either of a neuralgic character, ordinarily so called, or where there is local inflammation, as from boils, facial abscess, carbuncle, &c. Inactivity, or sedentary life, tends to produce constipation in the same manner. How different the condition where many hours are spent, day after day, in nearly the same position, to that of active muscular exertion! Contrast the mechanic, where the whole frame is in constant movement, with the overworked sempstress; the clerk, sitting for hours over the desk, with one engaged in active out-door occupation; the professional or literary man, almost deprived of walking exercise, to another in the full enjoyment of it. The muscular exertion of walking, horse riding, various athletic exercises, or other means by which the muscles of the abdominal walls are brought into play, are essentially necessary for sustaining good health.

A third cause of constipation arises from the alteration of the secretions poured into the large intestine. These secretions, or rather excretions, arise partly from the mucous membrane of the large intestine itself, and also from the small intestine, from the liver (the excrementitious portion of bile), and from the pancreas. They undergo various changes; a congested condition of the liver and of the portal system of veins, induces modification of the whole chylipoietic viscera.

The vena porta receives its branches from the large and small intestine, stomach, &c. ; hence a state of congestion of those parts interferes with normal secretion, often diminishing it in quantity, and altering it in quality ; in this manner we have constipation from hepatic disturbance, from the intemperate use of alcoholic liquors. Thus also in jaundice, constipation is generally the result, the motions clayey, white, and exceedingly offensive.

Disease of the lungs or heart, which interferes with the free circulation of the blood, renders the right side of the heart engorged ; as a necessary consequence of this, the liver and the whole portal system are congested, the secretion from the mucous membrane scanty, and constipation the result. This constipation increases the original disease ; and how often is the remark made in those who are the subjects of chronic disease of the lungs or heart, as in chronic bronchitis, or emphysema, asthma, and valvular disease of the heart, that as soon as the bowels become confined, they experience increased discomfort.

A state which may be called chronic catarrh of the mucous membrane is sometimes induced from this congestion of the portal system, and constipation very frequently follows.

But another cause of this altered secretion arises almost from an opposite cause—a diminished supply of blood from the mucous membrane. The secretion is scanty, but from a different reason ; there, secretion checked by engorgement ; here, diminished by want of supply.

The various excretory organs are closely connected the one with the other. The excretions from the lungs, the skin, the kidneys, the alimentary canal, are intimately associated. Their nicely adjusted balance continues during health, but if one becomes greatly in excess, the other consequently, and almost in that proportion, suffers ; thus excessive secretion from the skin diminishes secretion from other parts. The box of rhubarb pills is often carried by the pedestrian—and why ? The muscular exercise and action of the abdominal muscles should induce increased action ; and such would in many cases happen if the exercise were moderate ; but if persisted in so as to induce free perspiration, with rapid molecular changes in the muscles, blood is actually withdrawn from the alimentary canal to the skin and muscles ; the internal secretions become diminished, and constipation results. A similar condition is observed where excessive action of the kidneys carries off the aqueous portion of the blood too freely. The kidneys act less where the skin energetically performs its function ; thus, when the warm air of summer is suddenly changed to a cold chilly atmosphere, it checks the action of the skin, and induces increased renal secretion. We have already alluded to this in our remarks on diarrhœa and dysentery ; but the sudden interference with the action of the skin often induces those diseases ; hence the autumnal diarrhœa, and the severe dysenteries of hot climates. Cerebral congestion, over-anxiety of mind, extreme

mental occupation, act in this manner, as well as more directly upon the nervous condition of the alimentary canal. There is increased circulation of blood in the brain, and less in the abdomen; great excitement of the cerebrum is associated with diminished activity in the nerve of organic life.

Constipation is also induced by general anæmia, loss of blood; and very frequently in spanæmia or poverty of blood, as in the chlorosis of young women. The condition of the blood is here the primary cause of other secondary changes. There is inactivity or irregular muscular exertion, and the secretions are imperfect both in their character and quantity.

A fourth cause of constipation is the condition of the coats of the intestine itself. I have already alluded to the secretion from the mucous membrane, and especially refer here to the condition of the muscular layer, and nervous supply of the alimentary canal.

The muscular layer, in a state of health, contracts from slight direct stimulus upon the contents of the canal, but this contractile power is variously modified; sometimes excessive, leading to the immediate expulsion of the contents, but more frequently inactive, leading to constipation. This may arise from being unwisely excited to action by improper means: the injudicious use of purgatives, either from habitual continuance or of a too powerful character, leaves the muscular coat in such a state, that it will not contract from the normal stimulus, and this diminution of contractile power is increased by the constipation with which it is associated. The intestine becomes distended, the calibre increased, and the muscular fibre which could easily propel the contents of a cylinder one or two inches in diameter, is unable to do so when the cylinder is increased to three or four inches in diameter, and the canal sixteen times as large; a state of actual paralysis of the muscular fibre of the intestine may be thus induced; in the same manner as the urinary bladder, if enormously distended, is unable to empty its contents. Repeated doses of blue pill and black draught, of violent purgative medicines, of mercurial medicines, &c., render the whole coat of the intestine in a relaxed and enfeebled condition; the mucous membrane debilitated, the muscular fibre inactive, and half paralyzed; not that I mean for a moment that such remedies are not frequently attended with marked relief to existing morbid conditions, but it is the continued use of them which leads to chronic disease, perpetuated if not induced by the remedy itself. In some instances it is borne with apparent impunity.

Dr. Billing related to me an instance of a lady, who for thirty years took a grain of calomel every night; and a colleague of his own at the London Hospital for more than thirty years had taken the same quantity daily after dinner.

It is, I believe, universally acknowledged that the long continued habit of taking snuff irritates the fauces and epiglottis, producing cough, &c. Nor is dyspepsia the extent of its ill effects; the irri-

tating particles extend through the whole length of the alimentary canal. Several inveterate snuff takers have intimated to me the irritable state of the bowels; in whom it appeared that the mucous membrane was unnaturally stimulated and irritable. The oft-repeated stimulus leads to an enfeebled condition of the mucous membrane, a loss of contractile power, of healthy secretion and of nervous stimulus; as regards the stomach, dyspepsia is the result; in the intestine, diarrhœa or constipation: in some cases the rectum is principally affected, and it either retains the feces so as to form an impacted mass, which it is unable to propel; or if fluid, the same feebleness allows the contents to pass rapidly to the sphincter, itself sometimes so enfeebled as to be unable to restrain an involuntary discharge. Snuff may actually be seen among these excreta.

Drinking excessively of cold water induces an enfeebled, relaxed condition of the mucous membrane of the alimentary canal.

Cicatrices of the mucous membrane after ulceration, as in dysentery, leading to contraction and diminution of the canal, act mechanically in obstructing the canal, and interfering with regular peristaltic action. Of course tumours, or any growths pressing upon either small or large intestine, may induce constipation in this manner; but we defer entering into the causes of these cases of insuperable constipation, arising from cicatrices, till we speak of ileus. With these also we shall consider other more serious causes of constipation, namely, cancerous or fibroid growths; tumours connected with the intestine, or pressing upon it; the various forms of internal strangulation and intussusception, &c.

In speaking of constipation arising from diminished secretion, we have alluded to cerebral disease, determination of blood to the head, over anxiety and mental work, as inducing it. Here various causes often co-operate; a sedentary life and want of muscular exertion, with change in secretion, and actual diminution of contractile power. Although the muscular layer of the intestine acts independently of nervous influence, there is strong reason to believe that it is modified by it, though in a less degree than the secretions of the mucous membrane itself. In many diseases of the brain, the abdomen becomes collapsed, as if the healthy tone of the parts was lost.

In diseases or injuries of the spinal cord, this relation with the alimentary canal is still more marked; the bowels are constipated, and action is often induced with difficulty; not only from paralysis of the abdominal muscles, but diminution of contractile power of the muscular layer, as well as change in the secretions of the mucous membrane. This paralysis is painfully shown in these cases by the want of control over the sphincter muscle; the motions escape involuntarily.

In advanced life the feeble contraction of the parietes, the diminished excitability of the intestinal muscular coat, and the necessarily less active life, often produce constipation, which is increased by the nervous alarm of the patient.

Constipation is also a sign of inflammation of the peritoneal investment of the intestines; the muscular coat becomes involved, and ceases to contract with energy. This is a wise and beautiful provision, to which we have already referred.

Constipation also is induced by the pain of defecation, as in inflamed hæmorrhoids, or in ulceration of the rectum, or diseases of adjoining parts. So severe is the pain, that action of the bowels is prevented by the sufferer, unwilling to undergo, or rather desirous to postpone to the latest period, that which produces such intense suffering. It is a merciful provision that in health such necessary actions are free from pain.

It sometimes happens that a spasmodic constriction of the alimentary canal, especially the rectum, induces constipation; in most cases, however, it will be found that there is associated with what we have just mentioned some direct cause of irritation at the part, as minute fissure or ulceration of the mucous membrane, disease of the bladder or uterus.

A fifth cause of constipation may be the *contents* of the large intestine.

The feces having become hard and impacted, remain like a foreign body, and are only removed with considerable difficulty; or the character of the food has been such as to induce it. Many cases are recorded of substances taken habitually, as brown coarse bread, and the undigested parts have become agglutinated; so with calcined magnesia, taken in large doses day after day.

It is in the lower part of the large intestine that feces generally becomes thus impacted; although it sometimes takes place to a less degree in the cæcum, ascending or transverse colon.

6. Mechanical obstructions have been cursorily alluded to in reference to tumours, &c., affecting the coats of the intestine itself; but it is of most common occurrence, as in pregnancy or ovarian growths, to find that direct pressure is exerted upon one or other part of the colon, so as to interfere with the regular and free action of the bowels.

Symptoms.—Constipation manifests its effects on the brain by inducing a torpor of the mind, want of energy and activity; the sleep is disturbed, and not refreshing, the mind easily agitated, and often melancholic. There is also a general *malaise*, which renders the patient unwilling to undergo ordinary exertion and fatigue; there is pain in the head, sometimes at the forehead, at other times in the occipital region; and in those with diseased arteries of the brain, &c., or other predisposing cause of disturbed cerebral circulation, there is not unfrequently vertigo, disturbed vision, haziness, sparks before the eyes, *muscæ volitantes*, ringing noise in the ears (*tinnitus aurium*); occasionally there is actual momentary loss of consciousness.

In the circulatory organs it is only where disease exists that very marked symptoms are produced; the most frequent, perhaps, is

irregularity of the pulse, and uncomfortable palpitation of the heart. The pulse is generally compressible, the tongue flaccid, indented by the teeth, and showing an atonic condition. In the respiratory organs, dyspnœa is not unfrequently induced by the impediment to free action of the diaphragm.

Pain is often ascribed to the chest, especially across the sternum, which really arises from distended colon.

The abdomen is full, and sometimes masses can be felt in the course of the colon, of a round and hard character, simulating morbid growths, and, when perceived, causing alarm to the patient.

Various neuralgic pains are often induced, from direct pressure upon the nerves, sometimes in the right hypochondriac regions; frequently over the crest of the ileum in the course of the ileo-hypogastric nerve, or in the course of the genito-crural, supplying the groin and the testicle.

Aching pain in the loins and in the lower extremities arises from the interference with the free return of blood; and beside this symptom, a varicose condition of the veins is induced or aggravated, and consequent œdema. A similar condition of the hæmorrhoidal veins is also the result of habitual constipation; and all the discomfort attendant on hæmorrhoids. Irritation of the adjoining pelvic organs is sometimes excited, as irritability of the bladder, &c.

It has been stated that distended transverse colon may exert pressure on the duodenum, so as to lead to symptoms resembling dyspepsia; such an effect is exceedingly doubtful; where adhesions have taken place between the first portion of the duodenum and the colon, great distension of the latter may exert some pressure, but even this is problematical.

Diagnosis.—The diagnosis may be considered as generally sufficiently clear, but it must be remembered, that the various secondary symptoms, which are induced by constipation, may lead to serious apprehensions: it is sufficient to bear them in mind. As to impacted feces in the course of the colon, they have very often been mistaken for tumours. Their local character, mobility, and general symptoms serve to distinguish them. This is more easy in the ascending or transverse colon; but in the descending colon, and especially in the sigmoid flexure, the diagnosis is more difficult. Cancerous obstruction at that part is very insidious, and gradual constipation is its principal symptom. Local pain, and the small, firm, hard tumour at that part are very diagnostic of an obstruction of this kind. Impacted feces in the rectum and sigmoid flexure, sometimes become so firm and immovable, that the symptoms may closely resemble organic disease; weeks may be passed without evacuation, and gradually severe symptoms result, as vomiting, and occasionally extreme pain. A careful examination will, in most cases, render the diagnosis easy, and the patient's perseverance in injections and mild aperient remedies be effective. We do not find in simple

impaction of feces that the stomach becomes so irritable as in organic strangulation.

A case is recorded by Mr. Staniland,¹ of a patient, aged 73, who had habitual constipation, so that, during the last five years of her life the bowels were only acted upon once in every two months; after being confined for four months and eight days they were very freely acted upon; seven months then elapsed without any pain or evacuation. Some weeks before death she had a fall, which produced very severe pain in the region of the cæcum, which led to local inflammation, gangrene, and fecal extravasation into the peritoneum. The intestines were found enormously distended with feces, the transverse colon was nine inches in diameter, and the sigmoid flexure ten and a half; the rectum six inches. A remarkable instance of constipation of nearly four months' duration, after fever, is recorded by Mr. Gay, in the *Pathological Transactions* of 1854. The patient, aged 6, recovered.

The treatment of constipation is a subject of great interest, because the opinion of the practitioner is so frequently required. And here a knowledge of the habits and diet is essential. Regular exercise, where the life has been sedentary, and especially walking or horse exercise, is of paramount importance. It is true that the beneficial effect of pure air may be otherwise obtained, but not all its good effects; carriage exercise is not alone sufficient. To be brought to town in many of the crowded conveyances which hurry to the city day by day, to be wearied by standing, or quietly sitting at the desk, and when exhausted conveyed home in a close omnibus, or railway carriage, is sufficient to induce discomforts of a hundred kinds in London, without the additional causes of the anxieties of active life. In less degree the same thing is everywhere observed.

An actual distaste or aversion to walking may be easily acquired, and in circumstances where wealth, position, and the value of time render it unneedful and undesirable, the beneficial effect of walking exercise is easily forgotten.

Another very desirable thing is to endeavour to induce regularity in the action of the bowels; with many, an early movement of the bowels before or after breakfast, removes discomfort for the rest of the day; with others, though less desirable, the time immediately before going to bed is chosen.

The character of the food is an important consideration; sometimes injury is done by taking more than the frame requires, and the stomach can digest, or by too great sameness in it—variety is required, not that at each meal numerous forms of food should be taken and satiety induced by the niceties of the culinary art, but an admixture of animal and vegetable food is necessary, and a change in them requisite.

Vegetable food contains more undigestible material and alkaline

¹ Medical Gazette, p. 246. 1832-33.

salts which stimulate the alimentary canal, so that where there is a tendency to constipation, this alone may be sufficient to remove it. Brown bread acts by the irritating character of the indigestible parts of the grain; it must be remembered that actual bulk is required in our food. Again, gentle palpation of the abdomen, kneading the parietes with the palms of the hands has sometimes induced action. The bracing tonic effect of a shower-bath, or in less degree of cold sponging, where it is not contra-indicated, obviates constipation. These means produce their effect by the increased action of the abdominal muscles; but, another agent acts in a similar manner, namely, *electricity*. A galvanic current transmitted through the abdominal walls induces a very speedy action, or rather emptying of the colon; it has been sometimes recommended in the constipation of painter's colic. I have used it with manifest advantage in paralysis. A case of partial paraplegia, in which injections did not act satisfactorily, and drastic purgatives were undesirable, a galvanic current was passed through the abdomen every morning; in a few hours a free evacuation was produced without any discomfort. This agent, which has been employed to excite contraction of the uterus, may be frequently used with benefit in these cases.

Medicines, directly purgative, may be divided into several classes:—those which are laxatives—

1. Manna, figs, prunes, raisins, fruits, brown bread.
2. *Aperients*—Castor oil, almond oil, cod-liver oil.
3. *Saline purgatives*—Magnesia, sulphate of soda, potash, saline waters, bitartrate of potash.
4. *Mild purgatives*—Senna, rhubarb, aloes, mercurial medicines.
5. *Drastic purgatives*—Jalap, colocynth, gamboge, scammony, turpentine, croton oil, elaterium.

Inspissated bile has been used as an aperient, from the idea that the excrementitious portion of bile is naturally purgative in its action; but although ten or fifteen grains may act as an aperient, and assist in unloading the intestine, it is an offensive and less satisfactory remedy than others which we possess. These remedies act on different portions of the intestine and in varied manner; thus mercurial purgatives stimulate all the secretions, those of the liver, and the mucous membrane; senna, and saline purgatives act on the small intestine, and render the evacuations more fluid; aloes, and the drastic purgatives act on the colon; rhubarb has an astringent effect, and sometimes irritates and offends the stomach. Some stimulate the intestine to increased peristaltic action and excite griping pain.

The rapidity with which the effect is produced is also very diverse. The salines act quickly, especially if given with a considerable quantity of diluent fluid. Aloes is slow in its action, and requires several hours to produce any effect. Drastic purgatives are often followed by much trying irritation in the rectum, and by tenesmus.

Strychnia, or nux vomica, is a valuable remedy in constipation; it excites the muscular coat to contraction, at the same time that a

tonic effect is produced on the mucous membrane. It is well to combine with it purgatives, or sedatives, as aloes, and henbane, &c. Preparations of steel sometimes act as purgatives in the same manner.

The use of glysters is too frequently neglected in ordinary constipation; but their beneficial effect in most severe cases, or when called for from other circumstances, is more and more acknowledged; some act simply by distending the intestine, and thus exciting it to contract; warm water or gruel, or more irritating or actually purgative substances may be added: the soap enema, colocynth, turpentine, or rue, are of this character, the last two especially, where constipation is associated with flatulent distension of the intestines.

I cannot leave the subject of the use of purgatives in ordinary constipation, without speaking of the injurious effect of their indiscriminate and injudicious use; to some the use of dinner pill or an aperient at night, is constant, year after year; in others a slight discomfort leads to the use of the blue pill or black draught, or more active agents still.

Temporary relief is afforded, but the delicate mucous membrane of the intestinal tract is weakened, a state of chronic catarrh induced, and the very condition sought to be removed aggravated tenfold. In an enfeebled person, violent purgative medicine has in very many cases induced excessive prostration, and even fatal results; it is easy to excite a state of irritation which is almost impossible to subdue. The administration of vegetable tonics, with mild purgative medicines, and with ammonia, is often of great utility; a valuable preparation of this kind is the compound gentian mixture, containing senna, gentian, orange and lemon-peel, ginger, and tincture of cardamoms. The combination of aloes and myrrh is a preparation of somewhat similar kind; the tonic effect of the myrrh is associated with the purgative of the aloes.

Purgative medicines sometimes act more beneficially in combination; slight mercurials, where the secretions of the liver are imperfect, with aloes, rhubarb, or colocynth.

The addition of an anodyne, as hyoscyamus or Dover's powder, with more active remedies, is beneficial in removing their irritating character, and by preventing the griping pain sometimes induced by them, when given alone; thus the compound gamboge pill, or compound colocynth pill with henbane, acts as an efficient, but still mild purgative, emptying the large intestine; or the purgative may be sheathed by mucilaginous or oleaginous substances, rhubarb and linseed oil.

In infants, constipation is sometimes an exceedingly troublesome affection; the repetition of castor oil is trying, and even injurious; an old-fashioned remedy is that of exciting the intestine to contract by introducing a very small glyster pipe into the rectum, or a portion of soap cut into a conical shape; magnesia may be given in a tasteless form, the calcined, or citrate, &c., or sometimes a small

quantity of gruel will excite the bowel to action; in any case, however, irritating medicine must be avoided. It is difficult to overestimate the injurious effect of repeated doses of calomel, of jalap, &c.; muco-enteritis is induced, and sometimes fatal results follow; scammony with milk is a convenient remedy in some cases, but requires to be used with caution.

In the *aged*, enfeebled by a life of activity and declining strength, the intestines lose their normal power of wonted contraction; to use drastic purgatives is out of the question, and a constant change of milder aperients is necessary. The mildest laxatives may suffice, as prunes, figs, roasted apples, brown bread, manna, the confection of senna, or the compound rhubarb pill, alone or with henbane, so the compound colocynth pill, or scammony pill with henbane, or Dover's powder, or a few grains of dried rhubarb with capsicum and soap, may be given with each principal meal; and to these in some instances, very minute doses of strychnia are added, with considerable benefit.

CHAPTER XIV.

INTERNAL STRANGULATION—INTUSSUSCEPTION— CARCINOMA OF INTESTINE.

VARIED conditions, leading to insuperable constipation, have frequently been indiscriminately associated together, under the term *ileus*; and whilst we are willing to acknowledge that very great difficulty is connected with the correct diagnosis of these cases, we believe that where we have a history of the symptoms throughout, careful examination will enable us to divide them into several classes, and to make an approximative diagnosis, not only as to the character, but the position of the obstruction. Each minute circumstance is important in assisting the correct diagnosis of these cases; the accurate detail of previous symptoms, the mode of attack, the position of pain, the vomiting, the relative severity and period of commencement of these symptoms, the state of the abdomen, the general appearance of the patient, the quantity of the urine, &c. Dr. Barlow has drawn attention to several of these conditions, and shown their importance, especially the period of the commencement of the vomiting,¹ and particularly to the condition of the renal secretion.

The causes of insuperable constipation are numerous. As forms of internal strangulation we observe it:—

1. Arising from bands of adhesion, the result of inflammatory action; or simple adhesion without constricting bands, as of the ileum to the uterus.

2. From congenital intestinal pouch becoming adherent.

3. From the appendix *cæci* assuming a fixed and adherent position.

4. From the twisting of the intestine, of which Rokitansky gives three forms—I. Upon its own axis; II. Upon the mesentery; and III. Upon other coils of intestine.

5. Tumours developed in the mesentery leading to constriction. From other allied causes are:—

6. Intussusception.

7. Cancerous disease of the intestine.

8. Contraction of cicatrices, as after dysentery; fever.

Beside these, we must also enumerate:—

9. Enteritis and peritonitis.

10. Impaction of feces, or of foreign bodies, as gall-stones, &c.

¹ Guy's Reports, 1844. Clinical cases. Practice of Medicine.

11. Obscure forms of hernia, as into the obturator foramen, &c.
12. Prolapsus ani and inflamed hæmorrhoids.
13. Abdominal or pelvic tumours.

Abercrombie¹ describes cases of ileus in which no cause of strangulation was detected after death, and he believed them to arise from a spasmodic state of the intestine; in others, that only a portion of the walls of the intestine were strangulated in hernia, without the whole calibre being constricted, and that all the symptoms of insuperable obstruction were the result; in the former, we believe that either enteritis was present or the bowel was twisted; in the latter, that spasmodic contraction rendered a partial impediment complete.

The general symptoms of these conditions are pain in a greater or less degree, gradually increasing distension of the abdomen, constipation, generally of an insuperable character, vomiting, and, after a longer or shorter period, peritonitis, prostration, and death.

Pain.—In many cases of internal strangulation there is a sudden catch in the bowels, as of some displacement, and the patient can place the hand on the exact part, which generally indicates the seat of disease; although, if fatal, we may find that distension and other causes have led to considerable alteration of position. Where a portion of intestine has slipped under a band of adhesion, or into a hole of omentum or mesentery, this character of pain is observed, but where there has been a twist of the intestine, the pain is more gradually developed. The most obscure cases are those of internal strangulation, where there has been partial constriction, but slight enteric inflammation, as from indiscretions in diet, has led to spasmodic constriction at the part; in these the pain closely resembles ordinary colic. Tenderness of the abdomen may be absent for many days; in some the peritonitis does not come on till nearly the close of life, from the state of continued and extreme distension, and the ulceration of the mucous membrane extending to the serous coat; but where there has been sudden strangulation, the serous membrane is more quickly implicated, and the symptoms bear a closer resemblance to those of ordinary external strangulated hernia. If the strangulation be in the small intestine, either near the cæcum or in the jejunum, the pain will generally be found to be in the region of the umbilicus; where the colon is involved, the position of the pain is in the course of that part of the intestine, and often marks its precise seat; thus, in diseases of the sigmoid flexure, the pain will generally be found in the left iliac fossa, or in the left groin. Its character in intussusception is more severe, paroxysmal, and resembles that of ordinary colic; in many instances a tumour can be felt in the abdomen, arising from the involution of the intestine.

Tympanitis.—Unless the obstruction be very high in the alimentary canal, as in the case recorded with disease of the duodenum, of

¹ Abercrombie on Diseases of the Stomach and Intestine.

obstruction twenty inches from the pylorus, the abdomen gradually becomes distended and tympanitic on percussion. The enlarged coils of intestine may be observed through the stretched parietes, and the peristaltic movements are often clearly perceptible. If the ileum or the commencement of the ascending colon be constricted, the distension is central in its character; but if, of the descending colon, sigmoid flexure, or rectum, the portions of the large intestine above the seat of disease become greatly distended; they may be observed in the peculiar outline of the abdomen and the tympanitic resonance extends to the *loins*; where, however, the obstruction arises from portions of twisted large intestine, as of the cæcum or sigmoid flexure, we find that there is some deviation from the general character just mentioned; an enormously distended cæcum may be twisted over to the left hypochondrium, and constitute a prominence in that region.

Vomiting.—The character of the vomiting, and the period at which it has commenced, especially when irritating and powerful purgative medicines have not been administered, are important guides to our diagnosis. If the obstruction be sudden, and be situated in the small intestine, the vomiting comes on very quickly, in from half an hour to two or three hours; if it be high in the jejunum, the vomited matters are of a bilious character, but if near to the cæcum they may assume a fecal odour, and be completely stercoraceous. In the case recorded of twisted cæcum, where the obstruction was near the termination of the ileum, so fully fecal was the character of the vomited fluid that it was for a time supposed that a communication existed between the stomach and the transverse colon. Where the large intestine is the seat of disease, as in cancer of the sigmoid flexure, or of rectum, &c., several days sometimes elapse before vomiting supervenes; the time is, however, much accelerated if powerful drastics are given. In the latter state, also, the vomiting is more easily checked by the administration of remedies, as of ice or opium, &c. As to the immediate cause of stercoraceous vomiting, Dr. Brinton, in his valuable remarks in the *Encyclopædia of Anatomy*, has clearly shown that the peristaltic action is not in itself reversed, but that the contents of the bowel are propelled onwards in their normal manner till the obstruction is reached, when the fluid assumes a central retrograde direction, thus producing a double current, a parietal or onward, and a central or reverse current; this retrograde movement continues till the vomited matters are of the same character as those found at the seat of stricture.

Hiccough is also more severe and more speedily produced in the strangulation of the small, than of the large intestine. It must be borne in mind, that the vomiting and hiccough are sometimes extreme in peritonitis, where the serous membrane of the stomach is involved.

Urine.—Dr. Barlow has drawn especial attention to the amount of urine excreted, as a sign of the seat of obstruction; that where

the obstruction is high in the canal, as in the jejunum or ileum, absorption is partially checked, the renal vein receives a diminished supply, and a small quantity of urine is excreted; if, on the contrary, the rectum or sigmoid flexure be occluded, nearly the whole of the capillaries of the alimentary canal are free to absorb fluid, and thus the blood contains more watery elements, and the urine is abundant. This is a symptom deserving our attention, but it is not a certain one; several cases among those illustrative of disease of the sigmoid flexure, had scanty urine among their earlier signs, and we shall find that the amount of urine may be measured by the quantity of fluid vomited; that if in obstructed colon powerful drastics have been administered, and speedy vomiting induced, or peritonitis quickly set up, the urine may be found to be small in quantity. However, it is as true that the urine is abundant when the obstruction is low down in the canal, as that the vomiting is late in its occurrence. The fluid character of the contents generally observed in the distended intestine above the seat of stricture is to be remarked, and is an indication that no remedies are needed in these cases to render them more watery, but that the spasmodic state of the diseased bowel, in addition to the mechanical impediment, often prevents a drop of fluid or any gas from passing the stricture.

State of the rectum.—Dr. Barlow has here also added his diagnostic acumen to the elucidation of the symptoms presented. He has shown that in obstruction suddenly produced, the rectum retains its natural power of contraction, and will be found to be empty; if the disease be of gradual formation, that it is more patulous and readily yields to injections. To a certain extent this is the case, but it is not a symptom upon which we can rely. The intestine below the obstruction is generally contracted, and sometimes after the occurrence of the strangulation or other occlusion, a fecal evacuation may take place, or be removed after injection merely arising from this cause, and giving a delusive hope. Mr. Moore has proposed the injection of fluid into the colon, regarding the varied dulness observed on percussion in the loins as a sign of the position of the obstruction; and that in this way fluid may be forced into the ascending colon, and indicate that the disease is about that part.

The discharge of blood, or of offensive mucus, has been shown by Mr. Gorham¹ as a very frequent sign of intussusception; and it may be here remarked that it is important in all cases of this kind to make a careful manual examination of the rectum, as well as of all the parts in which hernia may occur. By this simple means impacted feces, inflamed hæmorrhoids, cancer of the rectum, prolapsus ani, suppuration in the pelvis, leading to symptoms of insuperable constipation, may be diagnosed.

Previous attacks of peritonitis, or constipation, are some indication to us of the probable cause of the disease. Previous inflamma-

¹ Guy's Reports.

tion is very likely to have left bands of adhesion, and attacks of constipation of less severe character are often found to have occurred in cancerous disease. Abercrombie mentions several instances of this kind, and the cases here recorded furnish illustrations of the same fact.

The progress of the symptoms, and the period at which a fatal result ensues, is subject to great variation. In sudden strangulation of the small intestine, we sometimes observe death following in five to seven days; whilst in other cases, especially of the colon, several weeks may elapse, and the patient remain free from pain and distress till about 48 hours before death. The obstruction and distension of the intestine lead to enteritis, and the mucous membrane becomes ulcerated. The inflammatory action extends to the peritoneum, so that it is very rare to find a case of fatal obstruction without peritonitis; sometimes merely a dry and congested state of the serous membrane, in others lymph is effused, and in many there is perforation. The perforation of the intestine is often at the seat of the constriction, and most marked in the upper limit; but in diseased rectum and sigmoid flexure, it will be frequently found that perforation has taken place, not only at the constriction, but at the cæcum. The ulceration of the mucous membrane in these instances is also peculiar; it is somewhat similar to that presented by the skin, which has been overstretched, and affected with erythematous inflammation and superficial ulceration. It is in instances where the obstruction is primarily from the mucous membrane, as in cancerous growth, that peritonitis is most slowly developed. Where all the coats of the intestine are involved, as in many cases of internal strangulation, the vessels of the mesentery become also obstructed, œdema is produced, and in a short time gangrene.

The part of the small intestine most frequently strangulated, either by loops, bands, or adhesions, is the lower portion of the ileum; so also in the colon the sigmoid flexure is that which we find most commonly diseased, and very frequently with cancerous growth.

The twist upon the mesentery is also more usually observed in the small intestine; in such cases a loop appears to have twisted, and by the traction of the mesentery, and the pressure of superincumbent parts, becomes strangulated.

In the colon the intestine appears to turn over upon its own axis, as in the instance of the cæcum which we have related; and those of obstruction in the sigmoid flexure, recorded by Dr. Barlow in the Guy's reports, in the year 1844. I have never witnessed any instance of the 3d class referred to by Rokitansky, in which one loop of intestine becomes twisted upon another as an axis.

Intussusception is that condition in which one portion of the intestine passes into another, as the finger of a glove drawn within itself. In this state it would not necessarily become entirely obstructed, were it not that the congestion, effusion, and inflammation produced close the canal completely. The section presents us with

three layers of intestine; two mucous surfaces and two serous being opposed to each other, and in the centre the ordinary mucous surfaces. There is sometimes a second involution of the intestine from below, passing in an opposite direction. The mesentery attached to the involuted portion is also drawn in, and by its traction the central portion of intestine becomes somewhat curved laterally, and the opening of the most depending part is observed to be linear. The vessels or the portion of intestine thus incarcerated become engorged, and render the obstruction complete; the whole of the folds involved become swollen and deeply congested, blood is extravasated into the substance of the mucous membrane, as well as into the mesentery; in a short time both the serous and the mucous surfaces become inflamed, and the effusion of lymph takes place; the opposed serous surfaces become adherent, and so to a less degree the mucous surfaces; bloody serum and mucus are effused into the canal, and this discharged per rectum is very diagnostic of intussusception. If life is prolonged, and the intussusception continue, the serous surfaces at the opening or upper part is rendered adherent; the contained intestine becomes gangrenous, and is often detached as a slough. In this way many inches of intestine may be discharged per rectum; in one instance as much as 44 inches of large intestine were evacuated; in another, which terminated favourably, and the specimen of which is in the museum at Guy's, the whole of the cæcum and ascending colon were thus passed. If the adhesions be disturbed or broken down after the slough has separated, fecal abscess is the result. In some instances the intussusception is restored; more frequently, more and more is forced in, symptoms of internal strangulation supervene, and death results from perforation into the peritoneum, or from peritonitis set up by the direct extension from the strangulated part. It must not, however, be supposed that the passage is always occluded; such is sometimes not the case, and even diarrhoea may be produced. It would seem that the intestine may be thus incarcerated within another fold, without being strangulated. The case recorded by Dr. Hughes in the Guy's reports, was of this kind; so also those of Mr. Phillips in the *Medical Gazette*; and still more remarkably that exhibited by Mr. Hutchinson at the Pathological Society, in which the symptoms extended over seven months.

The usual position of intussusception is in the small intestine, but a portion of ileum not unfrequently passes into the cæcum, and the cæcum and ascending colon become so involuted as even to reach the rectum. It would appear that in intussusception into the colon, constipation is less constant as a sign of disease.

The number of intussuscepted portions also varies much, being sometimes single, but in young persons, and especially infants, it is exceedingly common to find numerous parts so diseased, six to twelve, or even more. Some of these, however, are probably produced immediately before death; there is absence of all symptom of strangulation, and in the intestine itself no congestion, effusion,

or ulceration ; they are most frequently observed in inflammatory disease of the brain, or hydrocephalus.

The *symptoms* of intussusception are those of colic with constipation ; sudden local pain is produced in the bowels, followed by vomiting, constipation, prostration, haggard expression of countenance, falling pulse, distension of the abdomen, stercoraceous vomiting, peritonitis, and death. It is exceedingly difficult to distinguish this condition from ileus arising from internal strangulation or local enteritis ; but after a time there may be discharge of blood and mucus from the involuted portion, which materially assists in forming a correct diagnosis. And in intussusception, at the seat of pain a firm mass may often be felt at one or other part, which is not the case in ordinary internal strangulation. The sudden onset of the pain, and its subsidence, becoming aggravated in paroxysms, is an indication of this form of obstruction. It has been before mentioned that diarrhoea sometimes supervenes, especially where the large intestine is affected ; such is occasionally noticed where the disease is of a chronic character. In seeking to arrive at a correct diagnosis, it is well always to examine the rectum.

The *cause* of this abnormal involution appears to be sudden and spasmodic contraction of a portion of intestine, impelled onwards into a portion less contracted or altogether flaccid. It occurs at all periods of life, but perhaps is more frequent in youth and infancy.

The *prognosis*, although very unfavourable where we have well-marked indications of the existence of this condition, is not without hope ; we have observed almost hopeless cases recover. It is probable that in some the intestine is restored to its normal state ; in others, the strangulated bowel sloughs off, and the canal is free.

Cancerous disease of the intestine.—Cancer of the stomach is a disease of frequent occurrence ; it is more rare in other portions of the alimentary canal ; the rectum and the sigmoid flexure of the colon are the parts most frequently affected, and it is to the latter that we direct especial attention.

The termination of the sigmoid flexure appears to be particularly prone to this form of disease, and many of those which are described, as at the first third of the rectum, are at this part pushed down into the pelvis by the obstruction produced. It is a peculiar form that we find thus developed, not the extensive deposit with glandular infiltration, though this is sometimes the case, but it is a modification of scirrhus. There is a growth from the mucous membrane, the muscular fibre is infiltrated but contracted, and the calibre of the intestine diminished. The glands are frequently not at all affected, and in this respect it closely resembles epithelial cancer. The constriction and growth from the intestine are sometimes circular, sometimes one side is much more affected than the other. On examining the condensed part we find fibrous tissue, and some elongated nuclei ; but the growth from the mucous membrane presents more of the elements of cancer. These, however, are not like

the ordinary epithelial cancer elements, but many of the cells resemble large columnar epithelium, with a large nucleus, as if the growth had a modified form on account of its being situated on a columnar epithelial surface—the differentiation of abnormal growth.

Medullary and colloid cancer sometimes affect this part, but their course is often different; the ulcerative process extends through the coats of the intestine more rapidly, and instead of intestinal obstruction we have fecal abscess, either in the iliac fossa, or within the abdominal cavity itself. In the rectum similar forms of disease are presented, and occur in its several parts: scirrhus, leading to contraction, thickening of the external tissues, and obstruction of the intestinal canal. Medullary, on the contrary, causes ulceration and communication with the other pelvic viscera, with the vagina, bladder, or uterus, so that all the viscera become matted together into one mass. The rectum also frequently becomes involved, by the extension of disease from the uterus and vagina, leading to terrible manifestations of disease and suffering. Recto-vaginal fistula is sometimes the result, or the whole pelvic viscera becomes implicated in one mass of cancerous infiltration.

Where the coats of the intestine are thus diseased, the intestine above the stricture becomes gradually distended, the mucous coat thickened, the muscular hypertrophied, so as to be in some cases a quarter of an inch in thickness. The extent of these changes varies much, in chronic and slowly progressive disease being more manifest. The distension also produces inflammation and ulceration of the mucous membrane above the stricture, leading in many cases to perforation; this condition of ulcerative erosion is sometimes very extensive, at a considerable distance from the seat of obstruction; thus we find perforation of the cæcum taking place in obstruction of the sigmoid flexure.

Cancerous disease of the ascending or transverse colon takes place more rarely, and appears to be produced by some local exciting cause, as the cicatrix of an ulcer, or a blow. In a case of colloid cancer of the stomach we observed a similar state of the ascending colon, but in a less advanced condition.

Mr. Birkett, in the *Pathological Transactions*, has recorded a remarkable case of vascular villous growth from the colon near the liver; it was covered with epithelium, and its cancerous character was very doubtful. It was from a man, aged 58, who a year before his death had pain in the abdomen and diarrhœa. Two months before admission into Guy's he had constipation and pain, and when brought to the hospital had symptoms resembling strangulated hernia, with constipation of one week's duration; he had had scrotal hernia, and the sac remained. The cæcum could be seen distended, and so also the ascending colon, as far as the liver, where there was pain on pressure; the descending colon could not be felt. Mr. Birkett explored the hernial tumour, but no intestine was within it. The propriety of opening the ascending colon was discussed. The patient died four

days after admission. (*See* Prep. in Guy's Museum, 1854⁶⁵.) In another instance, Case CLI., a blow on the hypochondrium was followed by a cancerous growth, which led to fecal abscess and to perforation of the jejunum.

Carcinoma of the stomach sometimes extends to the transverse colon; such was the case in one of the instances we have recorded of disease of the stomach; but although there was fecal eructation, no stercoraceous vomiting occurred. Drs. Gairdner and Murchison have shown the important diagnostic indications of this symptom in communication between the stomach and intestine.¹

Symptoms.—In scirrhus disease of the sigmoid flexure, if we possess a history of all the symptoms, the nature of the malady may often be correctly shown. There is slight pain, fixed, and remaining for a variable period, in the left iliac fossa, with constipation, or an irregular condition of the bowels: after one or two attacks of this kind, with several months or years between them, the constriction becomes narrowed to such an extent that a very slight increase renders it complete. The bowels again are confined, the patient feels uncomfortable from their loaded condition; the abdomen is gradually distended, vomiting comes on, and the symptoms of insuperable obstruction. The vomiting occurs much later than in obstruction of the small intestine, unless powerful drastic purgatives have been administered; the secretion of the urine continues free, and the patient may appear in comfortable health, except that the bowels have not been acted upon. After ten or twelve days, however, if no evacuation ensue, the colon becomes much enlarged, its distended coils can be seen through the parietes, and there is tympanites in both lumbar regions; the urgent peristaltic movements may be detected through the parietes; at last ulceration takes place above the seat of stricture, and leads to fatal peritonitis, and extravasation or peritonitis arises, from the enormous distension, and the more general inflammation of the coats of the intestine. Sometimes after symptoms of threatening peritonitis, with judicious treatment the bowels are acted upon, and the patient is for a short time spared, even diarrhœa will occasionally supervene; the patient continues much enfeebled, and after a few months sinks exhausted, or another attack of constipation terminates fatally.

The same symptoms of insuperable obstruction sometimes arise in medullary or colloid cancer; but, as before stated, less frequently terminate in this manner. The intestines become united together, ulceration extends through the coats, and fecal abscess is the result, which leads to local peritonitis, severe pain and hectic; or it may extend into the iliac fossa, and burrow down beneath Poupart's ligament, as we have described with disease of the cæcum.

There is much less pain in cancerous disease of the sigmoid flexure than of the rectum, because the parts are more free, there

¹ Edinburgh Monthly Journal.

is less pressure on the nerves, and the adjoining structures are less involved. If the *rectum* be affected, the constipation and difficulty of defecation are more constant; the pain produced is often intense, especially where the lower third is affected. The feces become flattened; this may be the case where the sigmoid flexure is the part diseased; but less so, for the feces can be retained for a sufficient period in the rectum to reassume their ordinary character.

Tactile examination will detect disease at its lower part, but not at its upper third. The extension of disease to the bladder, vagina, or uterus, leads to most distressing complication.

In obstruction of the alimentary canal, the rectum should always be examined.

The symptoms in cancerous disease of the ascending or transverse colon are of the same kind, but it is more common to detect a hardness or tumour produced by the growth in the intestine. In many instances there is pain at the seat of the obstruction at an early stage. We do not find that the transverse colon becomes distended and tympanitic across the abdomen; or that there is the same resonance in the left lumbar region. These indications, however, must be used with great caution, because the distension of the small intestine may lead to enormous coils, and be mistaken for enlarged colon. The suggestion of Mr. Moore may be tried, the injection of water into the colon and the examination of the amount of dulness produced. The intestine, however, in some cases, becomes so contracted below the seat of stricture, as not readily to yield to the injection of water, and we might be led to very incorrect diagnosis by this means, if we trusted to that alone.

In many who are affected with cancerous obstruction of the sigmoid flexure, there is but little emaciation or appearance of cancerous cachexia. The patient may be well nourished, and apparently in health; generally, however, there has been some indication of disease; troublesome constipation, or occasional fixed pain.

These forms of scirrhus cancerous disease rarely occur in early life; at that period it is more likely to be medullary or colloid in character; but there are exceptional instances even here.

The position at which the sigmoid flexure becomes affected is at the brim of the pelvis, where it is more liable to temporary compression. It is also at that part where the triple longitudinal muscular band assumes a continuous character around the intestine.

Diagnosis.—In our remarks on internal strangulation, we have pointed out the diagnostic value of many of the symptoms presented. The varied causes of obstruction must be also borne in mind; not only the forms of internal strangulation, of intussusception, and of cancerous disease, but the presence of tumours, of enteritis or peritonitis, the impaction of feces or of foreign bodies, tumours connected with the uterus or ovaries, hæmorrhoidal tumours. In *intussusception* there is generally more pain like colic, there is the

discharge of bloody mucus, and a tumour can frequently be felt at the affected part. In *internal strangulation* the vomiting is more severe, the onset more sudden than in cancerous disease, and frequently something has been felt to have given way or slipped; there is greater resemblance to the symptoms of ordinary hernia; the small intestine is the part that is generally thus strangulated; and whilst the vomiting is more early and severe, the abdomen is less distended, and the course of the colon cannot be traced. In *impacted feces* alone, unless some foreign body be also present, the symptoms rarely, if ever, become so urgent, and scarcely ever fatal. In speaking of constipation, we have quoted a case from the *Medical Gazette*, where, after seven months' fecal obstruction of this kind, the patient had a fall and peritonitis was set up; she had had attacks of constipation of two months' duration, for four years. In simple fecal retention, after a whole month has elapsed, we may find very little discomfort, and the distension not extreme. In cancer of the sigmoid flexure, the gradual character of the obstruction, the seat of pain, the distension of the abdomen without tenderness, the abundance of urine, the late period at which vomiting occurs, are the principal signs; and many of them closely resemble simple fecal impaction. In the one we shall probably find that injections per rectum will be effective, and after a time followed by relief; in the other, the injection may be in a short time returned, but a small quantity admitted, and no fecal contents evacuated.

The early tenderness of the abdomen distinguishes enteritis, and peritonitis in most cases; and recto-vaginal examination serves to remove other sources of diagnostic difficulty.

Treatment.—If after the administration of mild aperient medicines, or even without their use, it has been ascertained with tolerable certainty that constipation from one or other of the causes we have described exists, it is exceedingly unwise to employ over-active treatment. Purgatives of all kinds are better avoided, and the use of drastic measures will tend to aggravate the sufferings, to shorten life, and remove the possible chances of recovery.

The administration of *opium* is now known to be attended with beneficial results, and frequently with partial if not permanent relief. By this means the peristaltic action is checked, spasmodic contraction diminished, and the opening which previously would not allow the passage of flatus, will suffer fluid feces to escape. Solid opium or combined with small doses of calomel, may be given, but we prefer opium alone; as in the soap and opium pill.

Drastic purgatives, as colocynth, croton oil, scammony, mercurials, &c., stimulate and excite the intestine to greater contraction; vomiting of a stercoraceous character is set up more quickly or is increased, and ulceration or fatal peritonitis speedily produced.

Crude mercury is equally objectionable; and electricity, which is a valuable remedy in simple constipation, is here productive of injury to the patient.

If there be indication of local peritonitis, leeches may be applied freely, and rest in the recumbent posture enjoined.

The diet should be spare, and of a fluid, unirritating, and non-stimulating kind. If, however, we find great prostration, it is well to give brandy or wine where it can be taken.

Injections are of great value in removing fecal concretions from the rectum, and below the seat of the stricture; and are sometimes followed by the discharge of flatus, affording great relief to the patient. In this way warm water, soap, castor oil, or turpentine injections may be used. The simple introduction of an enema tube, and its retention for a short time, may excite the lower bowel to contract, and cause the expulsion of flatus, thus relieving the painful distension. In some instances, it is well to use nutrient enemata, which may serve to prolong the exhausted powers of life for a short period.

By these means, sometimes, when the patient is almost in *extremis*, an evacuation is passed, and recovery takes place. In some, after the continued use of opium, diarrhœa is produced, and may become so severe as to require to be moderated by remedial measures.

Change of position has in some instances appeared to produce benefit, and been followed by recovery; but whilst this may sometimes occur, we have witnessed the injurious effect of moving the patient where the peritoneum is intensely congested, and perhaps inflamed from the great distension; death has in several instances quickly followed.

The application of cold water, or the exposure of the surface of the abdomen to the air, has been sometimes advantageously tried. In one of the cases which I have narrated, the patient said that he felt something had slipped, and in a short time an abundant fecal evacuation was passed, and recovery took place.

In the absence of relief by these means, the question of surgical interference becomes one of anxious consideration; after death from internal strangulation, the obstruction has been found so simple in character, that with great facility it might have been divided, and perhaps life saved. In several instances, Mr. Hilton has attempted this mode of relief, and with success, which perhaps warrants further trial; but it must be borne in mind, First, That the peritoneum is already inflamed, or in a state of intense congestion, and that general peritonitis is almost certain to follow. Secondly, That there is great difficulty in the diagnosis, and that some recover from apparently a dying condition. A very interesting communication on this subject was read at the Hunterian Society, a short time ago, by Mr. Hutchinson, to which we must refer, and to the papers of Mr. Hilton, in the Guy's Reports of 1852. The operation of opening the colon in the loins is of a less formidable character, and has in many cases tended to prolong life; it has especially been performed in cancerous disease of the rectum, to relieve either the obstruction or the severity of the pain. The diagnosis is here more evident;

but in others, where with some amount of certainty we have indications of obstruction in the sigmoid flexure, it may be employed, we doubt not, with much success. In the case recorded by Mr. Hilton, in the paper just referred to, the relief was exceedingly marked, and the life of the patient prolonged for several months. In a valuable paper by Mr. Caesar Hawkins, in the *Transactions of the Medico-Chirurgical Society*, the result of operation in forty-four cases of artificial anus, in stricture of the colon or rectum, is recorded; in ten, death took place within forty-eight hours, in twenty-one, within five weeks, and thirteen recovered; of these, six died in six months, and nine survived more than one year.

The descending colon may be opened in many cases with facility, without dividing the peritoneum; where the cæcum or ascending colon is diseased, such relief would of course be impossible. In many cases, however, these operations have been deferred so long, that peritonitis has already arisen from the extreme distension and enteritis, and the surgeon is then placed under the most disadvantageous circumstances.

CASE CXXVIII. *Internal strangulation of ileum. Band of adhesion.*—Elizabeth B—, æt. 52, admitted March 10, 1857, into Guy's. She was a thin woman, of sallow complexion, married, and had had a family. For twenty years she had had a pain in the left side occasionally, the bowels had generally been confined, but she had not had any attack like the present.

On March 5, five days before admission, after breakfast, she experienced sudden pain in the abdomen; it commenced about the navel, but soon extended over the whole abdomen; vomiting came on an hour afterwards; the bowels had been open slightly the same morning, but were confined on the previous day. Since that time no evacuation had taken place, vomiting continued, the abdomen became tympanitic, and moderately distended, and there was slight tenderness. The pain in the abdomen came on in paroxysmal attacks, but was generally absent when she remained quiet; the vomited matters continued bilious, and the urine abundant.

March 10. In this state she was admitted, the countenance expressive of considerable distress, but calm and resigned; the eyes sunken; the abdomen was slightly prominent in the centre, but not laterally; tympanitic, but without tenderness; the pulse was sharp, the respiration normal, and the urine abundant. Purgatives had been administered, and enemata, but she had vomited the former. The vomited matters continued bilious.

Enema saponis statim. Calomel gr. j, opii gr. j, 6tis horis. Catapl. lini abdomini. As food, beef-tea and ice.

12th. Countenance more haggard, and eyes more sunken; the vomited matters thick, green, offensive, but not stercoraceous; the pulse was more compressible, the abdomen in the same state as far as external appearance, and still without tenderness; there had been no relief, no flatus passed; the urine continued abundant; she had had a restless night, and suffered occasional hiccup. To continue the pills.

13th. The symptoms continued the same. To have injections of beef-tea, and to take gr. j of opium without calomel every 6 hours.

14th. No improvement. No pain or tenderness in the abdomen, nor was it more distended; she was not disturbed by vomiting, but was partially under the influence of opium; she was drowsy, the pupils contracted, respiration 16, pulse 104, rather fuller, and compressible.

16th. She was evidently dying; there had been no change in the symptoms for the better.

17th. At 3.15 in the morning, she died, rather less than twelve days from the time of the strangulation.

Inspection took place about twelve hours after death. On opening the abdomen by a small incision about four inches in length from the umbilicus, the small intes-

tines were found moderately distended, but on the fingers being passed towards the pelvis the strangulated bowel gave way, and some fecal extravasation took place; when the parietes were fully divided, the whole of the peritoneum was found inflamed, dry and deep red lines existed at the points of contact of the intestine, the stomach and transverse colon were moderately distended, the small intestine was still more enlarged. In the pelvis several coils of small intestine were found almost black in colour, and allowing of fecal extravasation; but this probably only took place after death. At the site of the right internal abdominal ring was a roughened and injected state of the peritoneum, as if adhesion had existed; there was a similar condition also on the right side. On turning aside the small intestine, a firm band of adhesion, round and dense, was found to extend from the region of the cæcum to the margin of the pelvis, at the termination of the sigmoid flexure; through this loop several coils of ileum had passed, and had become strangulated. The band of adhesion was found to pass from the mesentery of the ileum to the mesentery of the sigmoid flexure, and appeared to be a free margin of the latter, but perforated; the band was thin, and contained vessels; it is doubtful whether it was really a band of inflammatory adhesion, or a part of the sigmoid mesentery, which had become thinned and perforated, and so presented an abnormal free edge. The strangulation was four feet from the cæcum, and nearly two feet in length. The mesentery of the strangulated part was infiltrated with blood, the peritoneum almost black, and in several parts sloughy. The mucous membrane at the upper end of the strangulation presented an extensive slough, and the coats were destroyed; at the lower end the sloughing was rather less extensive and advanced.

The coils of intestine, contained within the adhesion, were united by moderately firm lymph.

The appendix cæci was perfectly free; below the band the small intestine was contracted, so also was the sigmoid flexure, but the transverse colon was moderately distended with flatus. The stomach was not at all dissolved, but the whole of the mucous membrane was intensely congested with very minute arborescent vessels.

The liver, kidneys, spleen, were healthy. In the left lung, at the lower lobe, were several lobules, in red and in gray hepatization; the whole of that lobe was in a state of early pneumonic consolidation; the other lung was healthy. The heart was normal, its right cavities filled with blood.

In this case, it is probable that a portion of intestine had existed within the band for some time, for adhesions had evidently existed between that part of the ileum and the parietes near the inguinal canal, and occasional pain had been experienced in the abdomen; the distension of the incarcerated part and the intrusion of other coils led to strangulation.

It was diagnosed before death, that the obstruction was in the small intestine, from the moderate distension, the short time that elapsed before vomiting came on, and the character of the ejected matters. The quantity of urine did not assist us here; the vomiting was moderate, because purgatives and irritants were avoided; the distension also was rather in a central part of the abdomen, and the transverse and descending colon could not be traced, as in the obstructed sigmoid flexure. As to the treatment, I believe it was most judicious after admission into Guy's, and that life was by that means prolonged for several days, and the patient spared intense suffering. The opium quieted peristaltic action, and if violent vomiting had existed, perforation would probably have taken place at an early period. Considerable injury would have resulted from the administration of solid mercury.

In reference to opening the abdomen, if it had been attempted very early, the band might perhaps have been divided, but during

the latter days of life, the intestine in a semi-gangrenous state, the operation would probably have been hastily terminated by the rupture of the strangulated intestine.

CASE CXXIX. *Colic. Lead? Simulation of internal strangulation. Recovery.*—A young man æt. 22, badly nourished, who had been residing in Rosemary Lane, was admitted, August 21st, into Guy's. He was pale and desponding, and had been suffering severely during eight days. He appeared to earn a scanty livelihood as a porter, and on August 14th, after taking his breakfast in his usual health, he lifted about three-quarters of a cwt. upon a cart, when he felt a sudden pain below the left hypochondriac region; he however went to his work, but was taken back, "doubled up," as he described it: after a few hours, vomiting came on, and both pain and vomiting continued till admission; he had not had any action from the bowels, although repeated doses of medicine had been taken, nor had there been any hiccup. He complained of severe pain across the umbilical region; the abdomen was not hot, or tender on pressure; there was some distension laterally, and in the position of the transverse colon, otherwise it was contracted. The tongue clean and pale; the pulse eighty, and tolerably full. He had passed but little urine, and no blood or mucus from the bowels. There was no hernia, but along the gums a dirty line which somewhat resembled lead.

For three months he had been a teetotaler, and had had occasional pain in the abdomen, but no constipation.

A soap injection was administered, and calomel, gr. v, with opium, gr. iss, as a pill. On the 22d and 23d there was no relief from the bowels, no medicine was administered. On the third day after admission the bowels acted slightly, castor oil was given, and followed by more active remedies. The bowels acted, and he left the hospital in a few days comparatively well.

This case was probably one of lead colic, in which the symptoms came on suddenly after exertion; it somewhat resembled internal strangulation, but the abdomen never became distended, in the manner usually presented in the latter disease (unless the obstruction be very high in the canal). It shows, also, the importance of not following too active a plan of treatment; the vomiting became much less after the purgative medicines were left off; the calomel and opium with enemata were used once; and on the third day the bowels were acted upon.

CASE CXXX. *Internal strangulation. Restored.*—William G —, æt. 27, applied among my out-patients at Guy's, January 30, 1857. He was a spare muscular man. On the 24th, whilst lifting a sack of coals, he stated that he felt something give way in the abdomen, and pain followed immediately below the umbilicus; vomiting came on, and his food was rejected directly after being taken; the bowels had not acted. The abdomen was tense, supple, free from tenderness, but there was a sense of faintness, and he had pain below the umbilicus, the tongue was clean, the pulse quiet. He was ordered by Dr. Hughes, under whose care he was admitted, of opium gr. jss, three times a day, and a turpentine enema. The enema brought away a solid fecal evacuation, but the vomiting continued, and he still complained of the pain about the umbilicus; he passed between two and three pints of urine. On the 2d of February the bowels were freely acted on, and on the following day he left the hospital.

The symptoms presented in this case were of a serious character, and it was very doubtful whether any internal strangulation or twist existed; they closely resembled those presented in such conditions, but very rapidly subsided; we should fear that after some time there may be a return of these symptoms, but with less amenability to treatment.

CASE CXXXI. *Internal strangulation. Band of adhesions to ileum eight inches from cæcum. Death on the eighteenth day.*—Isaac L—, æt. 43; his occupation had been that of hawking. Two or three years previously he had a severe “abdominal attack,” and two weeks before admission into the hospital he had been seized with violent pain in the bowels, accompanied with constipation; he passed a small motion on the morning after the pain came on, but had had none since, except a small quantity of fecal matter passed after injection; vomiting had been more or less urgent; the tenderness in the abdomen was slight, and the pain of a paroxysmal character; the tongue was dry but clean, the countenance anxious, stercoraceous vomiting came on, and he died on the 18th day.

On *inspection*—the small intestine was found much distended with fluid feces, and about eight inches from the cæcum a firm cord with a membranous band was found extending to the ileum, and a few inches above it, an unusual fold in the mesentery, apparently caused by this adhesion. The strangulation did not appear complete. The mucous membrane near the constriction was much congested.

The disease (perhaps inflammatory), two years before death, had led to the adhesion which produced the fatal obstruction. There was greater pain and suddenness of attack, than we find in obstruction from cancerous growth. These cases bear close resemblance in their symptoms to twists of the intestine upon itself or upon the mesentery.

CASE CXXXII. *Internal strangulation. Loop of small intestine passed into a hole in the great omentum.*—J. D—, æt. 45, a man who was, apparently, in the enjoyment of good health, till Monday morning, November 29th. On that day he alighted suddenly from a chaise, to fetch his master's carpet bag; at the same moment he felt sudden pain in the abdomen, low down in the right iliac region; about noon he began to vomit, and the vomiting recurred frequently. He had never suffered from any irregular action of the bowels, and had previously had good health. He was bled, and calomel with purgatives administered, without any effect. Enemata were returned with fecal odour. On the third day the abdomen was moderately distended, but free from tenderness; the pulse 84; the tongue injected and fissured. There had been no action from the bowels, and the vomiting continued.

On the *fourth* day, there was no change in the symptoms; he was placed in a warm bath, and water injected into the rectum. Whilst in the bath he became much worse, collapse came on, and death in five hours.

Inspection.—The peritoneum contained thin fecal fluid. The coils of the great intestine were lying in front of the omentum, which descended into the pelvis. The small intestine was adherent to the anterior abdominal parietes, and air was found to escape from a small perforation in the small intestine. A loop of ileum, six inches from the cæcum, together with the mesentery, had passed through an opening in the great omentum, and had led to the fatal strangulation and subsequent perforation. There was no ulceration in the whole of the canal.

In this case we had sudden occurrence of symptoms; the position of the pain indicated the seat of the disease; the vomiting came on a few hours after pain, indicating affection of the small rather than the large intestine; it showed that although the abdomen was free from pain and tenderness, the movement required to place the patient in a warm bath, and the injection of warm water into the rectum, are not free from danger; they hastened fatal perforation and peritonitis; how much more would such an effect have followed more sudden or violent exertion!

CASE CXXXIII. *Internal strangulation of the last eighteen inches of the small intestine, fatal after thirty-eight hours.*—Henry W—, æt. 19, employed as a lead and colour manufacturer in Tooley Street, had colic a year ago, but at the time of admission into

Guy's no trace of lead existed on the gums. He was of pale complexion, with light hair, and had his usual health till Sunday, July 28, at 7 P. M., when, soon after drinking some beer, he was seized with pain at the lower part of the abdomen, towards the right side. About an hour after this he had moderate action of the bowels. Sickness came on about 9 o'clock, and during the night he vomited whatever he took. An injection, administered before admission, came away with scarcely a tinge of feculent matter. He was brought to Guy's at 10 P. M., July 29th, under Dr. Barlow's care, in an almost pulseless state; heart, 144, the face and extremities cold, frequent eructations, the abdomen rigid, tympanitic, and very tender on pressure; the tenderness commenced at the lower part of the umbilical region; the tongue flabby; no urine passed; his respiration entirely thoracic.

Nine A. M. the day after admission, the abdomen was tense, slightly hollowed out on the right hypochondriac region, and tender on pressure. He was very restless, turning from side to side in bed, his legs occasionally drawn up. Passed a disturbed night, with the same symptoms as present on admission; his pulse could scarcely be felt. Shortly after this he was allowed by the nurse to rise up in bed, became faint, and died in about half an hour, thirty-eight hours after the commencement of the pain.

On examining the abdomen, several pints of bloody, dirty serum were found in the peritoneal sac. The whole of the small intestine was much distended, but several coils, corresponding to the last eighteen or twenty-four inches of the ileum, were in a state of approaching gangrene. The latter had become strangulated by a diverticulum from the small intestine, about one and a half inch long, and a band passing from the mesentery to the cæcal end of this pouch. The large intestine was less contracted than is generally observed in such cases. There was evidence of general peritonitis, lymph between the coils of the intestine. The mucous membrane was continued into the pouch, and much imperfectly masticated cocoa-nut, and the remains of gooseberries, which he had eaten in the morning of the attack, were found in the intestine. The remaining viscera healthy.

This case is worthy of being recorded, as presenting peculiar difficulties in diagnosis; for whilst the urgent vomiting, the state of the abdomen, and the mode of the attack, pointed it out as one of mechanical obstruction, the great depression and rapid termination seemed to refer it to rupture of the bowel. These latter peculiarities, however, probably arose from the extent and completeness of the strangulation leading to rapid gangrene. The hernial sac was represented by the general sac of the peritoneum, containing a considerable quantity of bloody serum. The state of the gums afforded no evidence of poisoning by lead. The position of the pain was not that arising from disease of the cæcum, nor does suddenness of pain always characterize mechanical obstruction. Pain may be absent for a considerable period. A slight constriction of the canal becomes so increased by irregular peristaltic action and over-distension, as to become complete. A patient may for years suffer from slight attacks of pain, from irregularity of the bowels, till after some indiscretion of diet, or other cause, he has a recurrence of pain and vomiting with constipation, or the bowels are acted upon slightly; no tenderness of the abdomen is present, but rigidity of the abdominal muscles; the vomiting continues, he has no further action from the bowels, but hiccough, rapid prostration of strength, and death speedily follows. The diagnosis here becomes beset with difficulty. Abercrombie records several cases of this kind, where there was adhesion without narrowing of the canal, existing probably for years, till from some unknown cause, complete and fatal obstruction took place; and

cases repeatedly present themselves where organic disease of great extent has existed for a considerable period, and symptoms of obstruction are manifested only a short time before death.

CASE CXXXIV. *Mechanical obstruction terminating favourably after seventy-eight hours.*
—For many of the particulars of the following case I am indebted to my friend, Dr. Gull.

J. S——, æt. 33, a coal porter on a wharf, rose on the morning of the 26th June, 1850, in his usual health, and before going to his work, went, as his habit was, to stool, and had a good evacuation from the bowels. About half an hour afterwards, whilst stooping to fill a sack, he was suddenly seized with a sharp pain across the abdomen in the hypogastric region, accompanied by a sense of constriction. He was obliged to leave his work and to go home; in a short time he began to vomit, and after the attack was unable to pass anything downwards. He was treated by Mr. Mitchell, of Deptford, but without effect, and on the evening of the following day, forty hours from the accession of the symptoms, he was sent to the hospital with a note, saying that no hernia could be found, but that an internal obstruction was suspected. The assistance of Mr. Cock was obtained, who examined all the outlets, but could detect no protrusion. On admission he had the usual symptoms of strangulated hernia, urgent vomiting, anxious countenance, pulse rather frequent, temperature of surface depressed, abdomen rigid, rather tumid, and slightly tender on pressure, urine small in quantity and high coloured. He was ordered a grain of opium every four hours, and to abstain from indulging his thirst. The report of the third day at noon was, that he passed a restless night, vomiting continually. He was seen early in the morning; everything was interdicted, even to cold water, and he was then better, the paroxysms of pain in the abdomen being less urgent. As he was under the influence of opium, the dose was diminished to half a grain, and a copious enema of salt and water was thrown by a long flexible tube into the rectum; it passed up readily, but without bringing away any feculent matter. In the evening he was restless, his countenance anxious, the vomiting and other symptoms continuing as before.

Fourth day, eight o'clock A. M. He vomited during the night in considerable quantity; the abdomen was tense, and coils of distended intestine could be partially traced, the peristaltic action making them prominent with the accession of pain in the abdomen, of which he complained bitterly. His countenance was still expressive of great anxiety, and the features were shrunk. He had passed about half a pint of urine, clear and well coloured; the pulse accelerated, and diminished in power. He was ordered to go on with the opium. During the morning his abdomen was exposed for some time, whilst a sketch was made of its peculiar form, and the position and direction of the prominent convolutions, in order to determine more accurately the precise seat of obstruction; when suddenly, about noon, he expressed himself relieved, saying that "something had given way within him," and this feeling was quickly followed by a copious flow of liquid feces inundating the bed. From this time he steadily recovered, the vomiting and hiccough at once subsided, and the face acquired a cheerful expression.

Certainly no cases present a less promising prognosis than those of mechanical obstruction of the intestines, nor has the enterprise of modern surgery yet succeeded in diminishing their mortality. The case here recorded presents points of no common interest; that it was one of mechanical obstruction there can be but little doubt, and if so, we had an instance of its spontaneous solution, and it answers in the affirmative the question, can we hope for a successful result in mechanical obstruction without surgical interference? From what we have seen in hospital practice, there is reason to believe that irregular peristaltic action following upon indigestible food, is not an uncommon cause of internal misplacement; but in the case here recorded, it came on after a night's fast, and before any meal had

been taken in the morning. He rose as well as usual, the bowels acted according to his daily habit; he went to his work in good health, but whilst in a stooping position the pain came on. It need not be mentioned that there was neither history nor trace of lead in the system, nor, indeed, were the symptoms such as arise from that mineral. The only remedy trusted to in the treatment was opium, but the happy termination of the case whilst the abdomen was exposed to the cold air, renders it probable that moderation of temperature had somewhat to do with the result. The application of cold has been suggested in such cases, and has much in theory to recommend it, and might be expected, in conjunction with opium, to effect all that mere treatment can effect. For, suppose a portion of intestine to have insinuated itself under any accidental band in the abdomen, by what means can we so well hope to liberate it, as by reducing its volume, and by allaying the vomiting? I would also suggest whether opium suppositories would not sometimes more efficiently promote the latter object than opium in the stomach. Of the opiate plan of treating intestinal obstruction too much cannot be said. It has both reason and experience on its side; and yet in the reports daily given of such cases, purgatives form generally the early part of the treatment, and are persevered in until the stomach will bear them no longer, serving only to exhaust the patient and increase the symptoms.

CASE CXXXV. *Internal strangulation and constipation. Subsidence of symptoms. Death from phthisis.*—(From the Museum Records.)—William H—, a man of middle age, was admitted into Guy's in 1829. There was obstinate constipation, vomiting of a stercoraceous character; no hernia could be detected. The symptoms gradually subsided, but the patient died from phthisis after several months.

On inspection, there were vomicae in the lungs. The intestines were irregularly contracted. The appendix cæci was bound by adhesion to the brim of the pelvis, and several bridges of adhesions extended to portions of small intestine at this part; one of them was very long, and had apparently led to constriction, and the previous symptoms of strangulation. No ulceration of the intestine existed.

Among the inspections at Guy's I find several cases of internal strangulation recorded:—

Elizabeth D., æt. 25, was admitted under Mr. Key's care, and died on the fourth day. A cord was found extending from the broad ligament to the ileum, seventeen inches from the cæcum, and had led to constriction and fatal peritonitis. The arch of the colon was found adherent to the fundus uteri.

Charles S., æt. 19, after symptoms of internal strangulation, on inspection, a cord was found extending from a diverticulum (six inches from the cæcum) to the mesentery, and had firmly constricted a portion of small intestine.

Tumours sometimes become developed in the mesentery, which act as predisposing, or as direct causes of mechanical obstruction. Among the records of the inspections at Guy's, is that of a boy, æt. 17, who after a blow on the abdomen, two years previously, had

gradual distension of the abdomen, fluctuation, some vomiting and constipation. The jejunum was found enormously distended. One portion of the mesentery near the commencement of the ileum contained numerous tubercles, supposed to be cancerous, and the contraction around these had led to nearly complete obstruction; other tubercles were situated in the pelvis.

CASES OF INTUSSUSCEPTION.

CASE CXXXVI. *Colic. Lumbrici. Diarrhœa. Intussusception of the ileum and ascending colon into the descending colon.*—This case is fully reported by Dr. Hughes in the Guy's Reports of 1856.

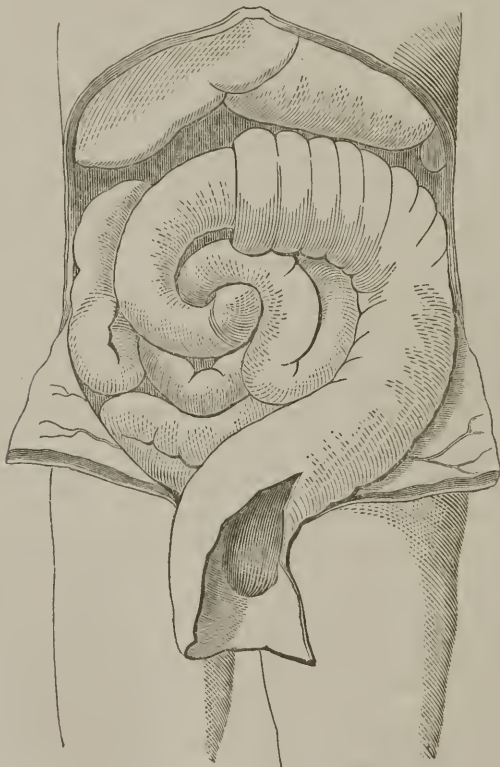
Daniel D—, æt. 14, was admitted into Guy's February 27, 1856, under Dr. Hughes' care. He had resided near the Tower, and had assisted his father, a tailor. His previous health had been very good, and he had never been ill. Seven weeks before admission he was exposed to great cold, and the following morning was seized with severe pain in his abdomen, which continued for several hours; the pain returned on the following day, and similar paroxysms had taken place till admission, but at uncertain periods. The attacks generally came on towards evening, and sometimes twice in the day. He was free from pain from the 21st to the 25th, when he took some castor oil, and from that time suffered from tenesmus, vomiting after meals, and loss of appetite. He described the pain as a twisting and tearing of his intestines principally about the umbilicus, and he detected "lumps" in the abdomen which disappeared on the subsidence of the paroxysm, during which he lay with his legs curled up and his hands on the abdomen; the duration of the pain varied, and was frequently relieved by passing flatus. In the intervals he felt well. The appetite was capricious, and sometimes excessive. The bowels were open twice a day, the motions semi-fluid or scybalous. On admission he was much emaciated, the expression of countenance haggard, there was a white fur on the tongue, the pulse was weak and compressible. Shortly after admission he voided a lumbricous teres with some mucus. Calomel gr. v, and opium gr. $\frac{1}{2}$, were given, and followed by a senna draught. Poppy fomentations applied, and milk diet ordered.

Repeated paroxysms of severe pain came on during the next fortnight, but in the intervals he was able to go about the ward. Calomel and opium, purgatives and enemata were ordered; diarrhœa then supervened with tenesmus. On March 15th he was suffering great pain, the tongue coated with a white fur, the pulse quick and compressible. The abdomen distended, coils of intestine were visible, and there was tenderness. He vomited a considerable quantity of green, bilious fluid, and the alvine evacuations were of the character of dysentery, consisting of bloody mucus without fecal matter. Three leeches were applied to the anus, starch and opium injection used; the linseed oil and tincture of rhubarb draught given, and small doses of opium with mucilage and mint julep repeated. There was, however, no relief to his symptoms, and the vomiting became more severe; a lumbricus was also ejected. One coil of intestine in the left iliac region became very manifest. Opium was given, with some relief to the vomiting and pain, but on the 23d the symptoms of peritonitis became suddenly aggravated, and he died on the following day, twenty-seven days after admission, and eleven weeks after the commencement of the attack.

Inspection.—The body badly nourished. Lungs and heart healthy. The abdomen was considerably distended. On opening the peritoneum the descending colon was found to be enormously enlarged and full; so also the sigmoid flexure, which made a great curve nearly to the right side of the abdomen. The transverse colon could be traced in a similar state to the right side of the median line; it was thrown into transverse folds, and the ileum was found to be pushed into it. The cæcum and ascending colon were entirely intruded. The ileum which was left was much distended; a great part of the jejunum, however, was collapsed, and situated behind the transverse colon and stomach, in the position described, as the sac of the lesser omentum. It occupied this position either from the congenital looseness of the colon, or from its meso-colon having been drawn aside by the intussusception; the foramen of Winslow was normal. The general peritoneum was intensely injected, and covered with lymph, and there was general acute peritonitis; the small intestine, however, which was situated behind the stomach, was not inflamed.

The stomach contained dirty semi-feculent fluid; the duodenum was normal. Several lumbrici were found in the jejunum; the ileum presented towards the commencement of the intussusception an ulcer about half an inch in diameter, and much congested at its margin; the intestine was full of yellow fluid feces. On tracing the intestine onwards, the lower part of the ileum, the cæcum, and ascending colon were found pushed into the descending colon. It could be felt within the large bowel, and reached into the rectum, within a few inches of the anus. Opening the sigmoid flexure and rectum, the termination of the intussuscepted portion was observed, almost black, but surrounded by semi-fluid feces; the apex of the invaginated portion was very tense, its opening, which would admit the little finger, was marked by a fissure towards one side on account of the contraction of the mesentery. Turning aside the bowel it was found to be convex and twisted from the dragging of the mesentery, and at the concave side was a large, irregular ulcer at the most tense portion. (Fig. 9.) In the sigmoid flexure, which was considerably distended, was a small opening

Fig. 9.



Position of intestines in case of intussusception of cæcum and ascending colon into descending colon and sigmoid flexure; the commencement of the rectum is drawn from its position to show the strangulated bowel within. Dr. Hughes' case, No. CXXXVI.

into the peritoneal cavity, which had set up the general peritonitis; at the other extremity of the intussuscepted portion the finger could be easily passed round the bowel, although there was some commencing adhesion from the effusion of lymph. The liver, spleen, kidneys, &c., were healthy.

This case was one of peculiar interest, on account of the obscurity of the character of the disease; the colic appeared to be due to the lumbrici, but the severity of the symptoms, the intense pain, purging of bloody mucus, the almost incessant vomiting, and the distended coils of intestine, indicated a more serious abdominal lesion. The disease lasted eleven weeks, and it is probable that the intussusception continued during that period, at first perhaps slight, but gradually increased to a greater degree. The canal did not become entirely occluded till nearly the fatal termination. It is possible that intussusception may have become *partially* restored with the relief of the symptoms, and at each fresh paroxysm pushed further onwards. I have observed instances in which symptoms very similar to those of this case have gradually subsided, and the patient recovered; such was Case CXXIX. The cause of death was peritonitis, consequent on rupture of the sigmoid flexure. The exciting cause of the intussusception, the irregular peristaltic action consequent on the lumbrici. As far as can be judged by a post-mortem consideration of treatment, opium was the most desirable remedy, and the avoidance of any purgative medicines; but with such an extensive intrusion of intestine no remedy would probably have been effective. The gangrenous condition of the inclosed bowel had a reparative tendency, which in many cases has resulted in recovery to comparative health.

CASE CXXXVII. *Intussusception. Recovery. Cæcum and the whole of the ascending colon passed per rectum.*—(See Prep. in Guy's, 1875.)—W. P——, æt. 6, a patient of Mr. C. King's, City Road, in 1852. His previous health had been good; he was attacked with œdema and discoloration of both legs; these symptoms soon subsided, but constant vomiting came on, with constipation and pain, and with tenderness of the abdomen, particularly in the right iliac region; these urgent symptoms remained for four days, when convulsions and insensibility ensued. He remained in this condition for twelve hours, apparently dying; on the two following days he was a little better, the vomiting ceased, but constipation continued; during the next four days there was no change. Eleven days after the seizure, and five days after the cessation of the vomiting, he had a motion, and passed the cæcum with the vermiform process and the ascending colon; when passed, the cylinder was complete. In a few days the leg became gangrenous, and was removed; the case did well, and completely recovered.

Case recorded by Mr. Benjamin Phillips, in the *Medical Gazette*. Man, æt. 28, emaciated, and who had been resident in a miasmatic district. He had suffered occasionally for weeks from some obscure affection of the digestive system; the abdomen was hard and tympanitic; there was frequent nausea, but rarely vomiting; the alvine evacuations were frequent and fluid, at other times natural; leeches were applied to the abdomen; the diarrhœa and nausea continued, the evacuations were greenish, and contained blood; an elongated mass was found occupying the left iliac fossa. The patient had a constant tendency to sleep. He died seven days after coming under Mr. Phillips's care.

On inspection there was found to be acute peritonitis, and an invagination of the cæcum and ileum into the transverse and de-

scending colon. Several inches of the invaginated intestine were gangrenous, and the serous surfaces of the inclosed bowel were adherent; perforation had taken place.

In another, recorded by the same gentleman, the patient, æt. 31, suffered for many months; there was sallowness of the skin, emaciation, a tympanitic state of the abdomen, and tenderness in the course of the descending colon and sigmoid flexure. In the left iliac region a tumour could be felt, considered by some to be impacted feces. On inspection there was general peritonitis, the cæcum and ascending colon were not visible, and a cylindrical tumour was found in the iliac fossa; "two inches of the small intestine had penetrated into the cæcum; this turned upon itself, was introduced into the ascending colon, which in turn had passed into the transverse colon, and all these parts thus disposed had reached the left iliac fossa." Several perforations had taken place.

In a case recorded by Mr. Jon. Hutchinson, in the *Pathological Transactions*, the symptoms of colic had existed for several months, and the patient, a young man, had sometimes swung himself on the steps of a ladder, as the only means of relieving the pain. The invaginated portion of intestine was found adherent, and evidently indicated that it had been so intruded for a considerable period.

CASE CXXXVIII. *Constipation. Subsequent perforation. Peritonitis. Intussusception restored.*—(From the Museum Records.)—M. S——, æt. 60, ten or twelve days before application, had experienced sudden violent pain in the abdomen, with constipation; vomiting came on, but no hernia could be detected; by avoiding medicine the vomiting subsided. A dose of croton oil produced an evacuation, but without relief; the bowels were afterwards moved by castor oil; the symptoms of peritonitis returned, and the patient quickly died. On inspection a portion of small intestine was found, dusky and lurid, and several patches of lymph were observed; on moving the intestines, feces escaped. The discoloured portion was six to seven inches in length, and the mucous membrane dark; the mesentery was also slightly discoloured and greenish at that part. A defined line marked the diseased portion.

The appearances presented in this case were those of an intussusception restored, which was the opinion of one who had had very great experience in pathological science; or, 2dly, of internal strangulation; 3dly, of local enteritis, as we have previously mentioned in speaking of that disease; or, 4thly, a twist of the intestine on the mesentery, which had become partially restored. The last, perhaps, the most probable. There was no evidence that any external hernia had existed; and whilst there *are* probably cases of intussusception being restored, the symptoms are then more closely resembling those of ordinary severe colic.

The following case is a remarkable one, as indicating one of the sequences of intussusception. It is from the *Medical Gazette*: A patient, æt. 65, had constipation, violent pain in the bowels, and vomiting; in four days, the pain ceased. It had come on August the 26th; on the 31st there were several offensive dejections, and on September 5th, forty-four inches of intestine were evacuated. The patient survived forty days.

On inspection, the sigmoid flexure was wanting, and the cæcum and colon, seventeen inches in length, opened into a large fecal abscess, into which the rectum passed.

CASES OF CANCEROUS DISEASE.

CASE CXXXIX. *Villous or epithelial cancer of sigmoid flexure, with cancerous infiltration of glands near the gall-bladder.*—Ralph G—, æt. 41, a stout, plethoric man, who served for fifteen years in the police force, and had been employed at the station house, so that his life was a sedentary one. He had had good health, with the exception of light attacks of rheumatism, till one year before admission, when after taking less than his usual exercise, his bowels became very confined; he had, however, generally a motion every three days.

He was admitted into the hospital, under my care, July 3d.

On June 20th, he passed a solid stool, small in quantity, but without straining or pain; since that time had not passed anything. He did not feel any uneasiness till the 23d, when he felt pain and a sense of weight in his abdomen, and vomited slightly. These symptoms passed off, but have since returned. He has had hiccough at night, and his sleep has been disturbed; the appetite had failed, his abdomen had swelled, and he had some dyspnœa. Before admission he took various aperients, and had an injection of turpentine, but without effect.

July 3. The abdomen was much swollen, measuring forty and a half inches in circumference; it was most prominent in the position of the transverse colon, and tympanitic. This tympanitic resonance could be traced in the course of the colon, nearly to the sigmoid flexure. At that part he had slight pain, and stated that some months before he had had slight pain at that part. He had not had any discharge of blood, mucus, or air, per rectum; there was no pain on manipulating the abdomen, nor any increase of temperature; pulse quick and sharp, 98; respiration accelerated, skin perspiring, tongue had white fur. Enema terebinth. statim. Pil. saponis c. opio gr. v, ter die sum.

4th. Vomiting took place at 5 A. M.; pulse strong, 86; skin cool; no vomiting since the morning. Cont. pil. saponis c. opio. Enema rutæ.

5th. Passed a considerable motion and felt much easier. He afterwards had some sleep, and was able to take some food; pulse feeble, 116; tongue more brown.

Nine P. M. Hydr. chlor. gr. xij, st. Repr. enema, or Rutæ abdom. applicetur.

6th. Passed a small quantity of feces; tongue dry, furred; pulse 120, sharp; skin clammy; respiration 40. Long tube introduced per rectum, apparently for eighteen inches; a pint and a half of water was injected; the enema caused considerable pain, and was retained for three hours, but failed to bring away any feces. Calomel gr. j; opii gr. j; ter quotidie sum. Two eggs, and brandy, ʒij.

Nine P. M. The enema caused severe pain; the patient was restless; skin hot and covered with a clammy sweat; pulse, 140; respiration, 40.

7th, nine A. M. Passed a restless night, but had rallied somewhat; did not complain of pain, but merely of sense of tightness and fulness. The whole abdomen very tympanitic, except in the left iliac region; the pulse, 132; respiration, 36; tongue brown and furred. The patient did not suffer any nausea or vomiting; the urine was moderate in quantity and high coloured.

Two P. M. Mr. Birkett could not detect anything on examination per rectum, and did not think the symptoms of insuperable obstruction sufficiently severe to warrant surgical interference. Pulv. opii gr. j, 4tis horis sum. Repet. enema simp.

Nine P. M. The patient appeared in the same condition as in the morning, covered with clammy sweat, and prostrate. Rept. pulv. opii. Enema assafoetidæ statim. Applic. abdomini ol. terebinth. et catapl. lini. Brandy ʒvj.

The enema was administered with the long tube without causing any pain. The turpentine was applied for half an hour, and afterwards the linseed poultice; it produced slight smarting pain.

The patient gradually sank, and died 2.30 A. M. on the 8th, nineteen days after the commencement of the symptoms of obstruction.

Inspection twelve hours after death.—Rigor mortis was well marked. The abdominal parietes contained a considerable layer of integumental fat. The abdomen measured round the umbilicus three and a half feet. On opening the peritoneal cavity, it was found to contain about three pints of opaque serum mixed with shreds of lymph; and

the peritoneum was much injected and covered with spots of lymph. Both small and large intestines were enormously distended; especially the cæcum and colon, as far as the sigmoid flexure, where was the seat of obstruction; especially the flexure was distended, and bound to the walls of the abdomen, it then turned inwards towards the promontory of the sacrum, where it became suddenly narrow at its union with the rectum. Externally the constricted mass felt hard; after removal it was found that an ordinary probe would scarcely pass. The obstruction was nearly an inch in length; on placing it in water, the surface was quite flocculent, resembling villous cancer. The intestine, both above and below, was healthy; above was a large quantity of fluid feces; below, small, scybalous masses. Near the gall-bladder were several glands, infiltrated with cancerous product. The other organs were healthy.

The microscopical examination of the diseased growth showed cells resembling columnar epithelium, but of greater size, and containing large nuclei. The whole of the flocculent surface was composed of cells of this kind, but no large cells, such as are usually found in epithelial cancer, were observed. They appeared to be rather modified columnar epithelium. The muscular coat of the intestine at that part was much contracted. The diagnosis in this case was from the first clear; the gradually increasing constipation, absence of pain, resonance, as far as the sigmoid flexure, and previous slight pain at that part, the normal quantity of urine, all tended to show that the obstruction was at, or about, the sigmoid flexure. It was a matter of regret, that in a case so favourable for surgical assistance, such means were postponed till fatal peritonitis came on; but the apparent mildness of the symptoms, absence of vomiting, on account of the non-administration of drastic purgatives, led some to the supposition that the disease arose rather from impacted feces than from an insuperable obstruction. The development of glands infiltrated with cancer near the gall-bladder, was an interesting fact with this form of disease, which appeared to be of the character of villous or may be epithelial cancer, in which there is less tendency to glandular infiltration.

CASE CXL. *Cancer of sigmoid flexure.*—Sarah O——, æt. 42, was admitted November 18, 1856, and died the following day, at eight A. M. In July she had a fall, and on August 5th experienced pain in the region of the sigmoid flexure of the colon. The pain gradually extended over the whole abdomen. She had injections, which produced evacuations from the bowels, several days before admission.

When brought to Guy's, she was too ill to give definite statements in reference to herself. The countenance was anxious, the pulse small and compressible. The abdomen was very much distended, and when exposed, the position of the transverse colon was more prominent than other parts, and tympanitic. The pain and tenderness were general; vomiting was very distressing; an abundant quantity of urine was passed. Opium was given, and warm poultice applied; but she died the following morning.

Inspection was made about six hours after death. The thoracic viscera were quite healthy. The peritoneum was much injected, and the intestines appeared dry, from a delicate stratum of lymph.

The colon was very much distended as far as the sigmoid flexure; the small intestine moderately distended. The stomach was healthy. Near the end of the ileum there was considerable congestion and several ulcers; these, however, were much more extensive in the cæcum. The canal was enormously enlarged, and there was very general transverse ulceration, exposing the circular muscular fibres, as if ulcerated from over-distension; in some parts the muscular coat also was destroyed, and slight perforation had taken place in one spot, but without extravasation of feces; the gut

was more than nine inches in circumference. The appendix was filled with mucus, very slightly acid, and adherent to the long axis of the colon. The descending colon was very much distended as far as the brim of the pelvis, where it became suddenly contracted; this part was adherent to the uterus and to a coil of small intestine. On separation the intestine was found to be drawn in at that part, and hard. On opening it, the little finger could be passed, the canal above was filled with fluid feces; at the constriction there were vascular prominent growths, corresponding almost to the position of the longitudinal bands; section yellowish, showing that both muscular and mucous coat were involved. On careful microscopical examination the surface was found to present a few villous processes, and the mass consisted of abundant nuclei and many compound nucleated cells, resembling some forms of medullary cancer; above the constriction was a smooth, round opening, extending through the coats of the intestine into the peritoneum, but adhesions had formed between the uterus and coil of small intestine preventing extravasation. The constriction was seventeen inches from the anus; below the stricture was some dry fecal matter. The other abdominal viscera and glands were healthy.

CASE CXLI. *Cancerous disease of sigmoid flexure. Ecchymosis of stomach. Ulcerated ileum. Contracted mitral valve.*—Ellen H—, æt. 53, admitted November 7, 1855. She was a short, emaciated woman, who had been living at Shepherd's Bush, married, but without family.

Seven months before admission she had severe pain at the lower part of the abdomen; she had been working and was obliged to desist; the pain came on four or five times a day; the bowels were confined, but had previously been regular. The motions were then very scanty, except after injections; she had sometimes had severe vomiting, and at times of offensive matter, and the urine had always been abundant.

The abdomen was on admission very large and tympanitic, but most prominent in the umbilical region; the tongue was clean; the pulse small and very compressible. No abdominal tumour was felt; and there was no tenderness. On admission varied enemata were administered, and purgatives, which latter aggravated the symptoms. November 24, opium was then given, gr. j, 6tis horis. This was followed by marked improvement, the stomach became quiet, and she was able to retain food.

November 30. She was not so well, complaining of severe pain in the stomach; tongue small, contracted, bowels open freely; had had enemata and opium.

December 19. Much better, abdomen supple, not distended, bowels free, and without pain, had good appetite, took porter and chop, and wine; opii gr. j.

January 1. For a week had not been so well, obliged to remain in bed; the abdomen painful, and the bowels constipated.

8th. Dying; the pulse intermittent; died ten P. M.

9th. *Inspection, 2.30, seventeen hours after death.*—The body was extremely emaciated; the eyes sunken; the abdomen greatly distended. The parietes of the abdomen were thin. On opening the peritoneal cavity, an enormously distended transverse colon was found to occupy the whole anterior region of the abdomen; from the liver it passed down to the brim of the pelvis, then ascended nearly to the scrobiculus cordis, before it formed a second smaller curve, when it became a descending colon. The large intestine was distended as far as the termination of the sigmoid flexure. Along the margins of the distended coils of intestine were lines of injection, and between some of the coils were delicate flakes of lymph. At the commencement of the rectum the intestine was contracted; and a drawing in of the coats of the intestine gave the part an irregularly puckered appearance; although thus contracted, the intestine at that part was readily movable. The whole of the colon was distended with fluid bilious feces; at the constricted part the intestine would only admit an ordinary quill; the constriction was one inch in breadth, raised, nodular, and deeply injected; the superficial portion was soft, and of a grayish colour; this rested on firmer iron gray structure, and minute masses of yellowish fat; the muscular coat was drawn in and lost at this part; in the colon both above and below the stricture it was distinct.

On careful examination of this part (Fig. 10), the surface was smooth, and presented columnar epithelium, nucleated cells, and elongated nuclei (*a*); beneath the mucous membrane, which was dense, changed in character and fibrous, was a considerable quantity of firm, fibrous tissue, arranged at right angles with the intestine (*b*), and leaving interspaces filled with nuclei, but without nucleoli (*c*); still deeper, muscular fibre could be detected. There was no structure of ordinary carcinomatous character. The nuclei were different from ordinary nuclei, not having well-defined

Fig. 10.



Obstruction of sigmoid flexure, growth cancerous.
a. Columnar epithelium and nuclei. *b.* Fibrous tissue beneath mucous membrane. *e.* Interspaces filled with nuclei. *c.* Surface of mucous membrane composed of dense fibrous tissue. (Case CXLII.)

cell wall or nucleoli. They appeared like a coagulated blastema, in course of development into a fibrous structure.

In the termination of the ileum was an ulcer affecting nearly the whole of Peyer's patch; the mucous membrane entirely destroyed; but it was of a different character from that of the colon; the rest of the smaller intestine was healthy. The stomach contained some black mucus adherent to the membrane. At the cardiac extremity was a raised, black patch, covered with white substance; it merely affected the mucous membrane. The follicles were evident, and contained some blood slightly blackened; but at the upper part of the membrane, where the capillaries were more numerous, there was an almost uniform black colour; it appeared that before death ecchymosis had taken place from the capillaries, and that after death the blood became changed by the action of the gastric juice. At the lesser curvature was another black patch, but without the white substance on the surface; there, too, the follicles were beautifully distinct, some marked out by being filled with changed blood; that which had exuded from the superficial capillaries was blackened. The white substance consisted of cells and crystals. The liver, kidneys, and spleen were healthy; the gall-bladder distended. There was no enlargement of the lymphatic glands of mesentery, abdomen, or chest. The ovaries and uterus were healthy; the os uteri quite small and conical. The lungs were healthy, but slightly emphysematous. Heart small, mitral rigid, contracted, and accommodating little more than one finger. The semi-lunar ganglia appeared normal.

In this case the obstruction was diagnosed to be at the sigmoid flexure, but her great emaciation led us to believe that there was more general disease infiltrating the glands. This was not the case, but the distension had produced ulceration of the ileum; nutrition was much impaired, the administration of purgatives increased the vomiting and prostration, and the diseased condition of the mitral interfered with the healthy action of the heart. The opium acted very well, and was followed by marked improvement.

CASE CXLII.—*Cancer of liver, lumbar glands, and sigmoid flexure.*—Robert W—, æt. 32, admitted September 19th, and died October 16th. He was a patten-maker, and had lived in the Borough. Four months before he began to feel pain; there were symptoms of indigestion, and afterwards severe pain in the right side. He emaciated; the abdomen enlarged, and the liver could be felt very distinctly on the right side, nearly reaching to the crest of the ileum. The pain in the side and across the abdomen became more severe, and he gradually sank. There was no indication of disease of the rectum observed during life.

Inspection was made twenty-seven hours after death. The body was spare, and slightly jaundiced. The chest was healthy, with the exception of the base of the right lung, where was a large patch about three inches in diameter, white in colour, situated on the surface of the pleura, and about one-eighth of an inch in thickness; this consisted of cancer, extending through the diaphragm from the liver; there were a few tubercles in the neighbourhood; and one of the glands of the neck was infiltrated with cancer. The lungs, bronchial glands, and heart were healthy.

Abdomen.—The peritoneum contained about three pints of serum and pus; the liver was $9\frac{1}{2}$ lbs. in weight, and towards the diaphragm had the appearance of a large abscess; the surface was irregularly contracted from the development of masses of cancer. On section, nearly the whole gland was found to be involved, with scarcely any intervening gland structure; and these cancerous masses presented nearly every stage of degeneration; some had a soft, yellow centre, others a dark green slough, and in some the centre was semi-fluid. The lumbar glands were infiltrated; and at the termination of the sigmoid flexure was a small fecal abscess; the walls of the intestine were ulcerated, broken down, and infiltrated with cancer, and some of the contents had extravasated among the cancerous exudation.

Here there was *no marked* constipation; the cancer was medullary rather than scirrhus or epithelial; there had been some pain in the part, but no obstruction. The patient was evidently wasting from organic disease; the liver was known to be diseased, and so slight were the symptoms of disease at the sigmoid flexure, that they were scarcely noticed.

The intestine may have been the part originally diseased, but of this we must speak doubtfully; the liver was that which gave rise to the more prominent symptoms.

The diffusion of the cancer to other glands was here well marked, and presented a contrast to that of scirrhus or epithelial disease.

CASE CXLIII. *Cancer of sigmoid flexure. Constipation. Death on the twentieth day.*—Margaret S—, æt. 36, admitted into Guy's under the care of one of my colleagues, May 29, 1847, and died June 4. She had been a charwoman, had enjoyed good health, and had lived temperately. At the time of admission she had been subject to constipation for two months, and for thirteen days had had no evacuation; she had taken blue pill and haust. scennæ. She was depressed and anxious; the countenance was yellow and cadaverous, and she complained of tenderness across the umbilicus. The abdomen was tympanitic; the tongue dry and brown; there was occasional vomiting, and a scanty flow of high-coloured urine. A few scybala were passed by the bowels. Colocynth, with magnesia mixture, was given, and a soap enema administered. The symptoms continued till the 31st, when a large quantity of pale urine was passed, and the vomiting and pain became distressing. On June 4th, the day of her death, the vomiting became stercoraceous.

On *inspection*, the peritoneum was found universally inflamed; the intestines slightly adherent. At the termination of the sigmoid flexure was a constriction which would allow water slowly to pass, but did not admit the flexible tube. The peritoneum appeared corrugated, and the appendices epiploicæ drawn together. On opening the canal, there was an irregular growth from the mucous membrane, and the mucous coat was thickened. The intestine was filled with semi-fluid feces. The glands not affected, and the other organs were healthy.

The symptoms in this case indicated that the seat of obstruction was in the colon. The urine was at first scanty, but afterwards became more abundant. Peritonitis came on early, and was the cause of death.

CASE CXLIV. *Cancerous disease of sigmoid flexure of colon. Insuperable constipation. Death on the tenth day.*—(From the Museum Records, prep. 1854²¹.)—Mrs. G—,

æt. 55, who had resided at Spitalfields, had for fourteen years, after a difficult parturition, suffered from occasional pain in the abdomen; and for several years before death had had increasing constipation of the bowels; at last the obstruction became complete, and there was no evacuation for ten days; powerful purgatives were administered.

At the commencement of the rectum, the intestine would scarcely admit a probe, and appeared to be contracted by effusion between its coats; the structure had a villous surface; other viscera were healthy. The growth had apparently been very slow in formation, and its cancerous character was doubtful.

For the particulars of the following case, I am indebted to my friend, Dr. Gull. The preparation is in the Museum at Guy's (1854³).

CASE CXLV. *Cancerous ulceration of the sigmoid flexure of the colon. Constipation.*—Mrs. H—, æt. 60. In May, 1854, she had an attack of diarrhœa, and some months previously had had a similar attack, since which she had been troubled with flatulence and pain in the abdomen. The diarrhœa was relieved, but the pain continued. On July 22d she had constipation, which was not removed by the use of castor oil, rhubarb, &c. There was no vomiting, the pulse was quiet and the tongue clean. Vomiting came on on the 24th. The examination of the rectum discovered a hard mass high up in the recto-vaginal space. Opium and ice removed the symptoms. After five days the bowels were relieved, and she then went on very well till September 20th, when the bowels again became obstructed; enemata were used, and opium administered; croton oil was rubbed into the abdomen. Purgatives were occasionally given, but in vain; after five weeks of complete constipation, symptoms of peritonitis came on, and she died. The operation of opening the descending colon was proposed, but the patient would not consent.

In this case diarrhœa alternated with constipation—a condition which is not unfrequent in disease of the sigmoid flexure.

CASE CXLVI.—*Cancerous disease of the sigmoid flexure. Insuperable constipation.*—(From the Museum Records, prep. 1854.)—Donnel H—, admitted with constipation of three weeks' duration in 1827. Powerful cathartics were administered, magnesia, colocynth, scammony, calomel, &c. He was free from pain and cheerful, but had a stercoraceous odour; the abdomen was exceedingly tympanitic, but not tender; the pulse quick, small, and sharp, the skin natural, the tongue moist and clean. The urine was at first scanty, but afterwards more abundant, and of a deep colour.

On inspection, the colon was found enormously distended, the small intestine rather less so; both contained fluid feces and gas. There were numerous eroding ulcers in the small intestine. Two inches from the termination of the colon, the intestine suddenly contracted; the mucous membrane was much thickened, and ulcerated with broad elevated edges of a leaden hue. The canal would only allow a goose-quill to pass. The lymphatic glands near the stricture were enlarged, and the peritoneum of a dark colour, and presenting some adhesions. Other viscera were healthy.

CASE CXLVII. *Cancerous disease of sigmoid flexure. Constipation, simulating hernia.*—(From the Museum Records, No. 1853.)—Henry J—, æt. 64, a corpulent man, who had been intemperate in his habits. On admission, the bowels had been constipated for four days. For twenty years he had been subject to hernia, but it had never become strangulated, and two years before it had been returned without any unpleasant symptom. On admission, the abdomen was greatly distended, but no proof of hernia existed; he had once previously suffered from constipation, which had been relieved by fomentations. Injections, &c., were used without any relief; vomiting of coffee ground substance came on, hiccup and death on the eighth day. The cæcum and colon were found to be enormously distended; in the middle of the ascending colon was some contraction, but three or four inches from the rectum was a complete and firm constriction; there was considerable peritoneal effusion, and some old adhesions had led to the partial obstruction of the ascending colon; the mouth of the hernial sac was closed; there was intense congestion of the cæcum, and

submucous purulent infiltration; at the constriction all the coats were diseased; the stricture would only admit a goose-quill; the mucous membrane terminated in a red, vascular edge. Mesenteric glands were not generally affected; one of them contained a calcareous mass.

In this case, if an operation had been performed, the constriction of the ascending colon might still have led to obstruction. It presents one of the difficulties which are always hidden in the diagnosis of these affections.

CASE CXLVIII. Cancer of sigmoid flexure. Obstruction. Relieved. Gradual exhaustion.—Richard C—, æt. 32, admitted under Dr. Gull's care, July 2, 1854, and died September 3. He had been troubled with symptoms of obstruction for five months, his abdomen often becoming distended, and again diminishing after escape of flatus. Various remedies were given, and with considerable success (quinine and opium, &c.). The bowels became freely acted upon, but the patient gradually wasted, and at last sank.

Inspection twenty hours after death.—The heart and lungs were healthy. *Abdomen.*—Enormously distended on account of the size of the large intestine; the omentum was drawn upwards. The small intestine was much enlarged; the cæcum and colon enormously so. The cæcum extended to the transverse colon, which with the sigmoid flexure were also very much enlarged. Just within the hollow of the sacrum was the disease, which could be felt as a hard lump about the size of a large hen's egg. The disease occupied four inches of the canal, and consisted of epithelial cancer. The walls were much thickened, and in the cellular tissue around was hard tissue, scirrhus. The interior of the gut was ulcerated, and upon it a few vascular fringes. The mesentery contained a few hardened glands. The walls of intestine considerably hypertrophied. The remaining tissue healthy.

This case was an exceedingly interesting one, showing the valuable and marked effect produced by judicious treatment. On admission there appeared but little probability that the obstruction would be overcome; the opium which was administered with quinine, so far allayed the intestinal action, and spasmodic contraction, that feces slowly passed the stricture, and for a time there appeared probability of recovery.

CASE CXLIX. Colloid cancer of sigmoid flexure. Artificial anus in groin. Pleuro-pneumonia.—Thomas C—, æt. 56. This man had had severe pain in the course of the ureter, and it was supposed that he had renal calculus. On admission it was evident that there was an abscess forming in the iliac region; this reached slowly below Poupart's ligament, and was allowed to open itself. The patient became more and more prostrate, and a few days before death troublesome diarrhœa came on.

Inspection was made seven hours after death. The body was rigid, and much emaciated; on the left side below Poupart's ligament, and at the crest of the ileum were two openings about a quarter of an inch in diameter, the surrounding skin being thin and red; a probe passed for several inches along the course of the crest of the ileum, and a discharge of feculent pus proceeded from it. The head was not examined; *areus senilis* was well marked.

Chest.—There were old pleuritic adhesions on the right side, and at the left base. The left lower lobe was consolidated, of a mottled red and gray colour, very soft, and readily breaking down, and with a considerable quantity of serum in it; the anterior and upper lobes of both lungs were emphysematous in a marked degree. The bronchial glands were healthy.

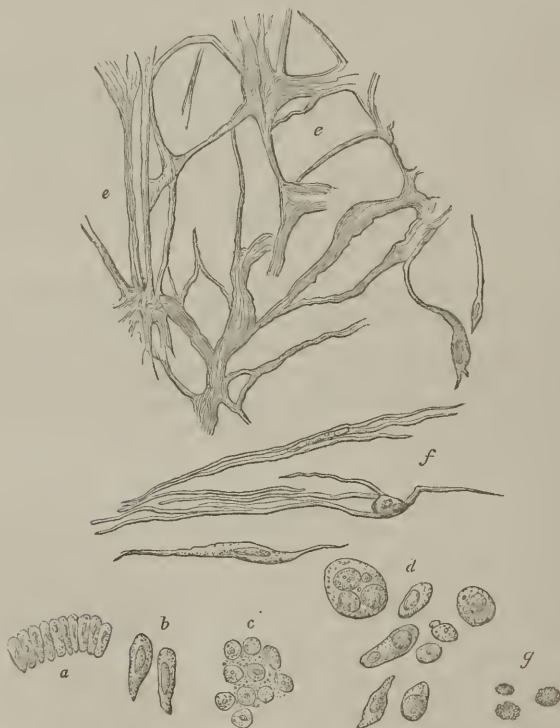
Heart.—There was a white patch on the surface of the pericardium, and its cavity contained about 3ij of slightly turbid serum. The cavities of the heart were distended with clot. The left ventricle was slightly hypertrophied. The aortic and mitral valves were atheromatous, and the endocardium opaque. The coronaries were atheromatous at their commencement, and there was commencing fatty degeneration

of the heart. The ascending aorta presented rigid atheromatous plates; weight of heart, seven ounces.

Abdomen.—The parietes were rigid; the intestines collapsed; two bands of omentum were adherent at the sigmoid flexure. The stomach was low down, and much distended; its mucous membrane was mammillated, the secreting cells granular, the pylorus healthy.

The mucous membrane of the cæcum and colon was gray. The colon was contracted; at the commencement of the sigmoid flexure was a hard mass resembling scybala; on opening this it was found to consist of a soft cancerous growth. The calibre of the intestine was almost obliterated by this irregular growth from the mucous membrane, it involved the whole circumference of the gut, and would admit the little finger at the upper margin. This growth was rounded, foliated, and extended in one part an inch up the descending colon; below, the margin was of the same kind, but more intensely congested. The breadth of this diseased portion was from one to three inches; the intermediate part was ulcerated, and a communication passed at

Fig. 11.



Colloid cancer of the sigmoid flexure $\times 400$ diam. *a, b.* Columnar epithelium. *c.* Nuclei with granular blastema. *d.* Large cells, with large nuclei, and some with several nuclei in them. *e.* Intervening delicate tissue. *f.* Elongated fibre cells. *g.* Masses resembling inflammatory granule cells. (Case CXLIX.)

the posterior part into an irregular sinus, behind the fascia, covering the quadratus lumborum, and burrowed downwards along the crest of the ileum to the openings in the skin; this sinus was filled with feculent pus. On making a section of the growth, it was found to be soft, of a yellowish white, striated appearance, and juice could be compressed from it; several parts presented transparent gelatinous masses of colloid

cancer. The whole of the mucous and muscular coats were involved and destroyed, and the muscular tissue of the quadratus lumborum was filled with round isolated masses of colloid growth, separated by bands of muscular fibre. The surface of the growth presented under 350 diams. (Fig. 11), columnar epithelium, some of normal size, others much enlarged (*a b*) and containing single or double nuclei; some of these were oblong; the principal portion, however, of the growth was composed of nuclei, large, about 1000th to 1500th of an inch in diameter, with distinct nucleoli, and closely packed together with very little intervening blastema (*c*); there were some large cells containing several nuclei (*d*). On the field were numerous masses resembling inflammatory granule cells (*g*). The intervening tissue consisted of delicate fibres, arranged so as to form cells (*e*); and in some parts presenting elongated cells (*f*). There was no doubt as to its cancerous character; there were a few small infiltrated glands in the neighbourhood of the cancerous growth. On the surface of the liver, both on the right and left lobes, the peritoneum was thickened from attrition; the structure of the liver was rather fatty and coarse, its weight $3\frac{1}{2}$ lbs. The vena porta and mesenteric veins were much congested. The spleen was soft, its corpuscles visible, 7 oz. in weight; the supra-renal capsules firm, large, and apparently healthy. The kidneys were somewhat atrophied, and contained a few cysts; they were $8\frac{1}{2}$ oz. in weight; the genital organs were healthy.

In this case, the examination of the feces or of the discharge might have detected cancer, but no tumour could be felt; there was no great constipation, but pain in the course of the ureter.

CASE CL.—*Cancerous disease of sigmoid flexure. Perforation. Fecal abscess.*—Elizabeth S—, æt. 55, admitted into Guy's March 29th, 1854. She was a married woman, but had had no children. She was much emaciated, and for three years had ceased to menstruate. On admission she had a hot and dry skin, the abdomen was tender, the pulse sharp and frequent. She had had pain in the hypogastric region, vomiting and purging, and the stools had contained blood. The diarrhœa became more severe, and there was increased tenderness and pain at the lower part of the abdomen, the evacuations contained inflammatory product. She died on May 16th, the purging having continued severely.

On inspection the lungs and heart were found healthy. A cancerous growth was situated above the sigmoid flexure; and there was ulceration of the new growth. The calibre of the intestine was contracted, and there was thickening of the mucous and muscular coats of the descending colon. The omentum was adherent to the large intestine at that part, where was a large fecal abscess formed, from the giving way of the descending colon above the seat of stricture. The liver was small and fatty. The kidneys small and atrophied.

This case is one of much interest, as showing an occasional mode of fatal termination in cancerous disease of the intestine; and that after ulceration has taken place at the seat of stricture, diarrhœa may come on. Here, however, the intestine had also given way, and had led to peritonitis, and the formation of fecal abscess.

In the Guy's Reports, 1850, Mr. Birkett has recorded a case of insuperable constipation, arising from stricture at the upper third of the rectum, and associated with scrotal hernia. The patient was 49 years of age, and for fourteen years he had had hernia. The bowels had been rather constipated. On June 13th, he could not reduce the hernia, and applied at one of the London hospitals. On the 18th he applied at Guy's. There were slight symptoms of strangulation, but the hernia was reduced, and he felt greatly relieved. On the 21st he came to the hospital, suffering very severe pain in the abdomen, with tympanitis; the voice was weak, and the countenance expressive of great anxiety. The pulse was small and frequent, and

the extremities cold. There was a swelling in the left scrotum, and although the patient did not complain of pain in it, there was much dragging, with sense of tightness across the abdomen; it was decided to make an explorative operation. No intestine was found in the sac, and the internal ring was perfectly free. He died on the 26th, nine days after any alvine evacuation. On inspection, there was general peritonitis, and at the commencement of the rectum there was a vascular growth from the mucous membrane, with thickening of the submucous tissues, which had led to complete occlusion of the canal. The hernial sac was perfectly free.

Great obscurity existed in this case; examination per rectum could not have reached the stricture, and the whole attention of the patient was to the hernia. The symptoms, however, were more gradual in the onset, than ordinary strangulated hernia.

CASE CLI. *Cancerous disease of intestine*.—Mary N——, æt. 40, living at Whitechapel, was admitted September 19th, 1856. Two years previously she had been pushed by her husband from the top of the stairs, and violently struck her abdomen across the banister. She felt great pain in her loins when she recovered herself, and was unable to assume the erect posture, but felt easiest in a semi-upright position. The abdomen became swollen, and a large hard swelling was felt in the left hypochondriac and iliac regions. This tumour gave her great pain on stooping, and she was unable to bear any pressure upon it. She had vomiting and diarrhœa. The tumour continued the same for about a year; at that time it became enlarged, and there was great pain across the loins; she frequently vomited and had diarrhœa. The urine occasionally became scanty, and she had headache, vertigo, and loss of appetite. She was a woman of dark complexion, was much emaciated, cachectic, and slightly jaundiced; a tumour was felt in the left iliac and hypochondriac regions, it was tender on pressure, and appeared to be felt in the lumbar region; the bowels were relaxed, the urine dark-coloured, but did not contain any pus. The diarrhœa continued with occasional vomiting till death, on the 18th at 8.15.

Inspection was made on the 20th. The body slightly jaundiced. The thoracic viscera were healthy, but coloured with bile.

On opening the abdomen, the peritonæum was healthy except towards the left side, where the tumour which had been felt during life in front of the left kidney was observed. There were adhesions firmly uniting several coils of intestine together. On separating them, which could be done without tearing the intestine, a feculent cavity was found, bounded above by the transverse colon, where it joins the descending colon, and by the greater curvature of the stomach; behind, by the pancreas; below by several coils of intestine-jejunum.

The transverse colon presented an irregular opening about three inches in circumference, the edges thickened, stained by adherent feces, infiltrated by cancerous product, and in some parts half an inch in thickness. The pancreas at its lesser extremity was infiltrated with cancer, and some of the adjoining glands; the stomach, though adherent, was not affected. At the lower part two coils of the jejunum were firmly adherent, and perforated; one, by a transverse opening extending about half across the intestine, the edges everted and much injected; the other was a smaller opening. The mucous membrane of the jejunum generally was injected, and covered with much mucus. The stomach and remaining parts of the intestine were healthy, so also the liver and kidneys. The uterus, ovaries, and glands, were healthy.

The disease was here of a strictly local character. The examination of the growth showed that it consisted of nuclei resembling those found in cancerous disease, and the general appearance was very strikingly that of cancer; still, no other part was affected. The blow which she had received at this part set up inflammatory

disease, and it is probable that a cancerous action subsequently ensued.

The diagnosis was difficult; the position of the tumour was that usually found in disease of the glands about the kidney, but no abnormal condition of the urine existed. The vomiting was less persistent, and the diarrhoea more so than is usually observed in cancerous disease of the stomach.

CASE CLII. Carcinoma of rectum. Ovaries. Peritoneum. Acute peritonitis. Scirrhus.—Ann S—, æt. 26, admitted March 26th, and died April 13th. She was a married woman, living at Dockhead, and had had a child two years and a half ago. For one year had had difficulty in passing her motions. She was exceedingly ill on admission, and no connected history could be obtained; the lowest part of the rectum was sacculated, about two inches upwards a stricture was found, through which a catheter could be passed; she gradually sank. She suffered considerable pain, but no vomiting.

Inspection seventeen hours after death.—The body very much emaciated. Head was not examined. At the apices of the lungs was slight pneumonic consolidation and a little chalky deposit. Heart small, without fat, tolerably firm clot on the right side, and in the right pulmonary artery.

Abdomen.—Viscera distended. The peritoneum was intensely injected, and the coils of the small intestine matted together. The mesentery shortened. The great omentum was contracted into a firm mass and nodulated; nearly the whole of the peritoneum was minutely studded with small white tubercles; they were very numerous upon the peritoneal surface of the stomach. The sigmoid flexure and the upper part of the rectum were very much distended.

On taking out the large intestine, a growth was found about three inches from the anus, having a semi-cartilaginous hardness. On its inferior surface the infiltrated mucous membrane had a double lip-like appearance, and was considerably raised. In the centre of the growth, all the coats of the intestine were destroyed, and infiltrated with heterologous deposit. The mucous membrane had a yellowish-white appearance on section; beneath it was firmer, white fibrous product mixed with iron-gray pigment; still lower, fat with firm tissue. The whole of the external cellular membrane was semi-cartilaginous. On careful microscopical examination, the mucous membrane was found to consist of a delicate cellular tissue of nuclear fibre, interlacing and leaving spaces filled by elongated and reniform nuclei; a few cells were observed, but the cell-wall was very imperfect; the submucous tissue was very beautifully composed of a series of bands of fibre tissue, with intervening columns of nuclei; at the upper part these bands of fibres formed series of arches. The muscular coat of the intestine above the stricture was much hypertrophied. In the sigmoid flexure above the stricture were one or two superficial ulcers or abrasions. The descending colon was filled with solid bilious feces, but was otherwise healthy. The cæcum and small intestine were also healthy, as to their mucous membrane. The whole of the cellular tissue about the ovaries was thickened, white, and infiltrated; both ovaries also were infiltrated with cancer, and one mass was of a yellowish colour as if degenerating. The uterus, vagina, and bladder were healthy. Liver was fatty. Stomach and spleen healthy. No infiltration of lumbar or mesenteric glands. Kidneys and supra-renal capsules healthy.

The disease in this case began apparently in the rectum, and extended from it, by continuity of structure. It was of a scirrhus character rather than epithelial, and although the obstruction was so great as only to allow a goose-quill to pass, no vomiting was produced by the constipation; the reverse would have been the case if violent drastics had been administered. The character of the pain in this instance was more severe than we find in disease of the sigmoid flexure; there was direct pressure on nerves of sensation, and

the disease extended to the adjoining structures. The growth could be felt on rectal examination, so that there was no difficulty in the diagnosis.

These instances show that with care the several forms of internal strangulation may be generally distinguished, when we have the whole of the symptoms before us; that whilst over-active and injudicious treatment increases discomfort and hastens a fatal termination, much may be done, and in some life prolonged for many months. These are not the cases for do-nothing practice; the proper use of enemata, of such diet only as can be borne without injury, opium, rest, and other means to which we have referred, will mitigate suffering even where cure is impossible.

CHAPTER XV.

ON INTESTINAL WORMS.

THE presence of worms in the alimentary canal ought to be considered as an indication of disordered secretion from the mucous membrane. In most cases it is only because the germs of these entozoa have found a nidus, in which their development can take place, that human beings become subject to them; this can more especially be said of those which make their habitat in the mucous membrane. As to the *strongylus*, the *trichina spiralis*, hydatids in various structures, or *filaria*, their entrance into the system arises more from locality, and sometimes from causes unconnected with the condition of the patient. The germs of the *tænia* appear almost indestructible by ordinary means.¹

Of the forms of entozoa which infest the alimentary canal, are the *tænia solium* and the *tænia* or *bothriocephalus lata*, the *trichocephalus dispar*, the *ascaris vermicularis* and *lumbricoides*.

The *ascaris lumbricoides* somewhat resembles the earthworm in external appearance; it is found in the small intestine, and sometimes clusters of them, two or three, may exist together in different portions of the whole canal, duodenum, jejunum, ileum, stomach; I have seen them in the œsophagus, and cases have been described where they have produced fatal result by getting into the larynx; they are found also in the colon. It has been stated that they are able to destroy the coats of the intestine and thus reach the peritoneal cavity; but it is now generally believed that liberation and perforation had taken place, and the lumbricus used the opening; the irritation they produce may aggravate ulceration in a marked degree. Dr. Young, in a paper in the *Medical Gazette*, records several cases where lumbrici were evacuated through the abdominal parietes—one was in a child, aged seven; several worms had been discharged from the bowels, an abscess afterwards formed in the right lumbar region, and living lumbrici were evacuated; after two years the abscess healed.

In another case, a child aged fifteen had severe pain in the abdomen, and the lumbrici were found in the stools; an abscess formed on the right side of the abdomen, and lumbrici were passed through

¹ Medic.-Chir. Review, Jan., 1857. On Entozoa in the Human Subject.

it; on inspection, it was found that a fecal abscess had been formed at the commencement of the colon, into which also the jejunum opened. It is probable that in both these cases either caecal or strumous disease or direct injury led to abscess, through which some of the lumbrici were discharged. The same paper mentions a recorded case of an infant, in whom a lumbricus was discharged from the navel; and another of a woman, in whom an artificial anus existed in the right groin, through which a lumbricus was passed. The symptoms found with this worm are tumid abdomen, full and doughy, indicating that the secretions and muscular coats are not in their normal condition; the body is often feebly nourished, the cheerfulness is lost, the appetite various, sometimes craving and uncertain; there is frequently severe colic; the breath is offensive, and there is irritation of the nose and anus. Other signs frequently are found, but they are, in many instances, sympathetic from the irritation of the intestine, especially where the subject is strumous and predisposed to disease in other viscera; the brain often sympathizes in this manner, so that the little patient may be seized with convulsions, or have attacks of cholera or epilepsy, conditions which are entirely removed by the evacuation of the worms.

They occur more frequently in young children, but are also found in young persons and in adults; they are, perhaps, more common in strumous and enfeebled children, and tend to perpetuate the disease which has led primarily to the development of the worms, gastric or remittent fever, strumous disease of the abdomen, &c. As to the worms themselves, they are four to eight inches in length, unisexual, the female being much larger than the male. The mouth of each is triangular, and presents three tubercles; this is continuous with an alimentary canal which terminates near the opposite extremity in a transverse fissure; the surface of the body is smooth, and, on careful examination just beyond the anterior third, two long oviducts are found to terminate in a canal passing to a minute opening; in the male is the termination of a long spermatic duct in a projecting penis.

For the treatment of these cases it is usual to administer purgatives of calomel and jalap or calomel and scammony, and that repeatedly; such purges, it is true, bring away the worms, but often only partially; they also remove a considerable quantity of offending and irritating mucus, but it will often be found that milder purgatives are afterwards more effective, such as the compound rhubarb powder (rhubarb, soda, and calumba) of Guy's, with a few grains of hydrargyrum cum cretâ, or one of calomel, or the compound soda powder with mercury, and these associated with vegetable tonics and steel, as infusion of calumba with tincture of iron, or steel wine, &c.

The *threadworm*, the *ascaris*, or *oxyuris vermicularis*, is more common than the *ascaris lumbricoides*, and is a great torment to children, in whom it is especially found; its favourite locality is the rectum, and it produces intense itching at the anus; during sleep it

sometimes crawls from the anus and irritates the perineum and adjoining parts.

The itching just mentioned is one of the most marked indications of their presence, but on looking at the evacuations they will be seen like minute fragments of thread. There is less constitutional disturbance than with the *ascaris lumbricoides*; itching of the nose, irregularity of the bowels, and impaired digestion are the usual signs, but these are often slight. The worm is very small—the male two to three lines in length and the female about twice as much; they are numbered in scores.

Relief is best obtained by improving the general health of the child, regulating the diet, acting on the bowels by mild laxatives and alteratives, and destroying the worm by local applications. Dr. Watson recommends the infusion of quassia, and I have often observed its efficiency; decoction of oak bark may also be used, or a solution of alum or sulphate of iron, about gr. x, or a scruple to a pint of water; tincture of iron was used by Dr. Darwall in the proportion of ℥ss to ℥viij.

Trichocephalus dispar.—I have seen this worm much less frequently than I expected from the descriptions of authors, having very often searched for it in the post-mortem examinations made under my own superintendence at Guy's, but have only occasionally found it. It is about one to two inches in length, and the head is exceedingly small, resembling a hair, hence the name; there is a minute mouth, and, at the larger extremity, an anal orifice; this extremity also presents a beautiful sheath, and in the centre a spiculum, which is described as the penis of the male; the body is slightly curved or twisted. In the instances referred to, no sign indicated their presence during life; they were situated in or near to the cæcum; it is in this part that observers have always found them.

Tænia solium, or tapeworm.—This is an exceedingly common affection, and often comes under our notice among the out-patients at Guy's Hospital. The paper of Dr. Gull, on the efficiency of the oil of male fern, in the Guy's Reports of 1855, indicates the frequency of the complaint. Patients present themselves saying that they have tapeworm, that they have observed portions with the feces, or several feet of one are produced. On inquiring into the symptoms, we find the patient generally pallid, complaining of irregular and sometimes voracious appetite; of pain or sense of exhaustion at the stomach, or in the abdomen generally, often nausea and malaise; the tongue is clean or furred; there is some irritation of the nose and anus; the pulse usually compressible, or sharp and excitable; the pain, however, is much less than in the *ascaris lumbricoides*; sometimes there is disturbance of the senses, vertigo, tinnitus aurium, &c.

The age of those affected varies much, from three years to advanced life, both in men and women; almost in every occupation and

condition—the higher grades of society are not exempt from it. Dr. Gull has suggested that the locality of Rotherhithe, Bermondsey, and the Borough, renders the inhabitants peculiarly liable to this complaint, probably owing to its great dampness, and the quality of the water; but it is far from being confined to such localities. The worm consists of an immense number of segments, whitish in colour, and resembling portions of tape appended the one to the other. Each segment contains double and complete organs of generation, a ramifying, branching oviduct, which terminates in the *tænia solium*, at the *margin* of the segment; and a minute spermatic duct, which opens at the same part. Nutriment appears to be imbibed by the surface, but ganglia and a circulatory system have been described as existing near the head; these structures have never come under my own observation. The general size of the sections is about three to five lines in breadth, and greater in length; but towards the head the segments become exceedingly small, and at last slightly expand, so as to form a minute rounded head, about half a line in diameter; this is furnished with four suckers, which resemble disks depressed in the centre; these are situated in a regular manner round the most prominent part of the head, and quite at the extremity are sometimes seen a minute circle of hooklets; these are often absent. No mouth or opening has been found, and these appendages are probably merely for attachment. I have never examined an unbroken worm, but they are described as being twenty to one hundred feet in length, and even three hundred. They sometimes continue to distress a patient year after year, who, after a few months of comparative comfort, finds himself again annoyed by them. The hydatid or echinococcus is sometimes discharged through the alimentary canal, from the liver, or other parts, but is not found in the canal itself. The investigations of Von Siebold, Küchenmeister, &c.,¹ have shown that the *tænia* is the same animal as the *cysticercus*, but in a different developmental condition. The *tænia solium* is that which we almost always observe in this country, but I have several times seen the *bothriocephalus*. Dr. Gull showed me a beautiful specimen of this a short time ago, from one of his patients; in this the head is destitute of hooklets and suckers, but has a transverse fissure in the segments; the generative orifice is in the centre, not on the margin. The *bothr. latus* is found in Switzerland, Poland, Russia, whilst Holland and Germany have, like ourselves, the *tænia solium*.

As to the treatment of these cases, the remedies called anthelmintics have been most varied; many appear to act by destroying the worm and then expelling it. This is the case with the oil of turpentine given in doses of ʒss, and followed by castor oil, or other purge, if necessary. This was the usual remedy at Guy's till the

¹ British and Foreign Med.-Chir. Review, Jan. 1857, on Entozoa of the Human Subject.

last few years, and was a very effective one, producing sometimes vertigo and sickness; but these were merely transient. Turpentine, however, is a nauseous remedy, and is trying to the patient, though almost anything will be willingly borne to be free from such a companion. The turpentine was followed by the bulky remedy, the Kousso, from Abyssinia; this was less effective, and has now, in the hands of my colleagues and myself, given place to the oil of male fern, an old remedy, but one deservedly approved. I can bear testimony to its value. Drs. Hughes and Gull administered it in numerous cases, which are stated in the paper previously cited, and we now seldom find that it fails. In several instances I have found the patients return, after a few months, again complaining of the same disease, having passed segments; the male fern was repeated, and with apparent success. In one instance the patient came a third time. It is true that in this case the head was not found, and without this we can never be sure that the disease is eradicated. The oil of male fern does not appear to produce any injurious effect—a child, by mistake, took ʒiiss of it every night for a week; purging was the only uncomfortable symptom that followed.

It is generally given quite on an empty stomach, and I usually follow it by a dose of castor oil in about six hours. It is well not only to give it on an empty stomach, but to avoid taking food till it has acted, so that it is well to administer it at bedtime. I have no experience in the pomegranate root, which is stated to be of service; and none whatever in the almost exploded remedies of cowhage or metallic tin.¹ After the worm has been discharged, vegetable tonics, with mineral acids, and especially some of the preparations of steel, according to the age and condition of the patient, ought to be prescribed; as the steel wine, or the ammonio-tartrate, or the tincture of iron, with quassia, &c.

Dr. Gordon, in his Report of Diseases of the Stomach and Bowels in India, describes a remedy for tapeworm, which he found exceedingly effective: the Kameela, or *Rottlera tinctoria*, in ʒj doses.

¹ Medical Times and Gazette, May, 1857.

CHAPTER XVI.

PERFORATION OF INTESTINE FROM WITHOUT. ABSCESS IN ABDOMINAL PARIETES EXTENDING INTO THE INTESTINE. FECAL ABSCESS.

It is usually believed, that next to the small intestine the perforation of the coats of the stomach ranks in the order of frequency; the colon is, however, from varied causes not unfrequently perforated, and this is a more common occurrence than is generally supposed. These perforations divide themselves into two great classes: 1. Those which arise from disease commencing in the intestine itself, and to which we have referred in numerous instances, as perforation of the ileum in fever and struma; of the cæcum and its appendix; of the colon in dysentery, in cancerous disease, and in several forms of insuperable constipation. On the contrary, in a second division the perforation is from without, or from the extension of disease from adjoining structures. These constitute an important and an exceedingly interesting class of diseases.

1. From the peritoneum, as in strumous peritonitis.
2. From disease of the stomach, as ulceration or cancer, extending into the transverse colon.
3. From the liver—hydatids, or abscess, obtaining an exit by means of the small or large intestine.
4. From the gall-bladder, calculi thus escaping.
5. From abscess in the spleen.
6. From abscess in the kidney.
7. From abscess in the abdominal parietes, or loins.
8. From diseased ovary communicating with the cæcum, colon, or rectum.
9. From cancer in various structures.
10. From extra-uterine foetation.
11. From one portion of intestine opening into another, as the appendix into the rectum.
12. From blows, or external injury.

In many of these forms of disease last enumerated, various and characteristic symptoms precede the perforation of the peritoneum or of the intestine; thus, the signs of cancerous disease of the stomach arise some time before fecal vomiting or eructation indicate extension into the colon. In hydatid disease of the liver there is the

presence of a rounded tumour, of slow formation, having often a peculiar vibratory thrill, and without general disturbance, before the occurrence of local peritonitis, or the discharge of hydatids, either by the mouth, or with the evacuations per rectum.

In gall-stone we have very severe pain in the region of the gall-bladder, with vomiting or jaundice, before intense peritonitis, from rupture into the general cavity of the abdomen, or obstruction by its impaction in the jejunum or ileum takes place.

In abscess of the spleen the symptoms are more obscure, and constitute part of a general constitutional disturbance, till perhaps the discharge of pus by stool indicates that a communication has been formed with the transverse or descending colon.

In abscess of the kidney, or pyelitis, there is purulent urine; but where there is suppuration external to the tunic of the gland the symptoms are more obscure.

In ovarian or cancerous tumours, tactile examination will detect growths of those characters with more or less cachexia. Some of these forms of disease are more obscure than others, but where fecal abscess is the result there is considerable uniformity, severe local pain and tenderness, hectic and prostration, which steadily increase; and where the abscess is not limited by adhesion, very rapidly fatal.

Suppuration in the *parietes* of the abdomen is frequently presented, and simulates deeply-seated mischief; for a short time considerable obscurity may attend it. The symptoms are generally of an acute character; considerable pain and febrile excitement precede inflammatory oedema of the skin, and while the effused products are bound down by firm fascial investments, the symptoms closely resemble cæcal disease, or local peritonitis, &c.; in fact every part of the abdominal parietes presents us with disease on the surface, resembling deeper injury. In the hypochondriac regions, suppuration connected with the costal cartilages, or ribs, simulates abscess of the liver, empyema, hydatids, diseased gall-bladder, or corresponding disease of the spleen; in the right or left iliac regions abscess in the parietes may be mistaken for affections of the cæcum or sigmoid flexure; in the lumbar regions, for renal or spinal disease; in the umbilical, for strumous or cancerous disease; and, lastly, in the hypogastric region, pelvic cellulitis, for ovarian or uterine disease.

Simple suppuration in the parietes generally tends to the surface, is opened or discharged spontaneously, and in many cases does well, unless connected with pyæmia, or in cachectic subjects; at other times, on the contrary, it is less limited; it spreads extensively among the muscles, extends also in depth, and gradually produces local peritonitis, or discharges itself into some of the viscera. Thus abscess about the kidney opens into the colon, that in the iliac regions into the sigmoid flexure, or cæcum.

The most fertile source of these forms of parietal suppuration are blows and falls. I have observed them after blows, or pressure on the abdomen, falls on the back, &c. In pyæmia and cachectic sub-

jects, apparently very trifling causes appear to be sufficient to lead to it.

Diagnosis.—The pain will generally be found to be very superficial; but in many instances, at an early stage, before any inflammatory œdema has been produced on the skin, and whilst the disease is confined beneath the fascia of the abdomen, there is much obscurity. In reference to the *treatment*, this obscurity is of no great moment, for at that period local depletion, by leeches, rest, warm cataplasms, are equally applicable to local peritonitis as to parietal inflammation. Where suppuration has actually taken place, the sooner the pus is evacuated, the less likely is it to burrow among the flat muscles and fascia of the abdomen; and even in abscesses, fecal or otherwise, extending secondarily to the parietes, unnecessary delay is sometimes made in discharging their contents. The rule is, I believe, a correct one, to open these abscesses very early.

CASE CLIII. *Suppuration external to the sigmoid flexure of colon. Communication with the intestine and the anterior abdominal parietes.*—Elizabeth R—, æt. 39, a widow who had supported herself by dressmaking, was admitted into Guy's under my care, March, 1855. Till a fortnight before admission she had enjoyed good health, when she felt pain in the back, which extended to the shoulders and knees. The greatest pain, however, was in the course of the ilio-hypogastric nerve. These symptoms were accompanied with considerable febrile excitement.

Saline medicines with colchicum, etc., were prescribed. In a few days the pain, which had simulated rheumatism, ceased, and she appeared to gain strength under the use of decoction of bark with carbonate of soda.

On March 26th, three weeks after admission, she complained of pain in the left iliac fossa, and a firm tumour, about the size of a hen's egg, could be felt deeply in that part. There were no tenderness in the spine, numbness in the legs, or other symptoms of disease of the spine. An examination per vaginam was made by my colleague, Dr. Oldham, but did not give any evidence of disease of the ovary. The bowels were easily acted on by hydrarg. cum cretâ, by castor oil, and by enemata; but this action did not affect the size of the tumour or alleviate the symptoms. The urine was normal, and there was no indication of renal disease. The pain gradually increased in severity, but was considerably relieved by the repeated application of leeches, by taking iodide of potassium, bichloride of mercury, and occasional doses of morphia. It was believed that the malady consisted in disease of the sigmoid flexure of the colon, with local peritonitis.

May 10. The pain had returned with much severity, and hectic came on. The tumour increased in size; it could be felt extending to the quadratus lumborum, and also reached the anterior abdominal parietes, which, at the left iliac fossa, were red, œdematous, and exceedingly tender.

19th. The bowels were acted upon three times freely, and a considerable quantity of purulent mucus discharged. The examination of this discharge could detect no cancer cells. The pain and hectic continued, the patient becoming pale and exhausted; the left thigh and leg became swollen and tender; afterwards the right; and there was excessive pain in the course of the femoral veins. Nourishment and stimulants were administered as the patient could take them. Quinine and opium, or morphia were given.

June 8. The inflammatory œdema of the anterior abdominal parietes had increased. My colleague, Mr. Callaway, made an incision at this part, and more than a pint of exceedingly offensive pus was evacuated. Every means were used to sustain the patient, but the discharge continued abundant, and bearing feculent odour, and her strength gave way. Her tongue remained clean and moist, but her appetite ceased, so that she became quite unable to take food. There was no pain at the scrobiculus cordis, vomiting, or thirst, but emaciation and sense of exhaustion. Bed sores formed on the sacrum, and, a few days before her death, cough, which aggravated her distress. She gradually sank, and died June 24.

Inspection was made twenty-four hours after death. The body was blanched, and the lower extremities oedematous; the pleura was healthy, but the posterior lobes of the lung were in a state of red hepatization; the heart and its valves were healthy.

Abdomen.—The peritoneum was healthy, except in the left iliac region, where the omentum and several coils of intestine were adherent. In this region was an abscess, situated behind the peritoneum and fascia, and containing offensive, feculent pus; it extended to the anterior abdominal parietes in front, above to the diaphragm and kidney, and posteriorly nearly to the spine. Very careful examination could detect no disease of the ileum or vertebra, or pelvic cellular tissue. The abscess communicated with the sigmoid flexure by three small openings, in close contact the one with the other; the edges not thickened, but valvular. The small and large intestines were otherwise healthy, and the opening into the intestine was evidently secondary. The uterus, ovaries, and kidneys were normal. The stomach was of normal size; the mucous membrane pale, and had undergone degeneration. The liver was more than five pounds in weight, and extremely fatty. The lower portion of the vena cava and of the common iliac and external iliac veins were filled with very firm, white, adherent fibrin, and the coats of the vein were much thickened.

The review of this case showed that the pain in the course of the ilio-hypogastric nerve arose from direct pressure upon that nerve by inflammatory effusion; that the tumour felt in the iliac fossa consisted of this effusion pushing forward the peritoneum and sigmoid flexure; that the subsequent symptoms arose from suppuration and its extension in various directions inwards into the colon, leading to some extravasation of feces and of pus into the alimentary canal and into the abscess forwards, so as to reach the anterior parietes, where it was opened, upwards to the diaphragm, and inwards to the cava and iliac vessels, which became involved and obstructed by fibrinous material. That it did not arise from diseased bone was proved by careful examination; and it appeared probable that some accidental blow had led to this suppuration, with its fatal results, or that irritation in the intestine had led to inflammation external to it, and subsequent suppuration.

After the tumour had been felt, evidence of suppuration soon arose, and the discharge of purulent mucus showed that it had formed some connecting link with the intestine, or that there was ulceration of the coats of the intestine itself. Renal, ovarian, spinal, or parietal suppuration, or cancerous disease of the sigmoid flexure, might give rise to many of these symptoms. The absence of all indication of diseased kidney was shown in the condition of the urine. Disease of the spine was exceedingly doubtful, from the want of tenderness, numbness, and the course of the suppuration. The position which the tumour assumed and vaginal examination showed that the ovary was not involved. It appeared to arise from disease near to the sigmoid flexure, either commencing in that viscus and extending outwards, or beginning in the parietes and making its way into the intestine. It was in deciding as to which of these might be the case that the principal difficulty consisted. The discharge of purulent mucus from the intestine and the feculent character of the pus indicated a connection between the abscess and the intestine. Before death, I was led to believe that the disease commenced in the sigmoid flexure, and that the suppuration external to the intestine was

secondary; the inspection after death showed that the reverse was the case. It was closely allied to cases of suppuration external to the rectum, but so deeply was it situated that any exploratory incision would have been unjustifiable till there was more certain evidence of suppuration than was presented at the commencement of the disease.

CASE CLIV.—*Abscess in the loins. Feculent-smelling discharge. Pleuro-pneumonia with feculent-smelling sputum. Recovery.*—T. II—, æt. 34, was admitted into the Clinical Ward, under my care, June, 1855. He was a man of steady, industrious habits. His health was good till an attack of rheumatic fever two years before; and at Christmas last, six months before admission, he had a very severe fall while at work, falling upon his head, and it was believed that the skull was fractured. He remained for some time in the Hospital, under the care of Mr. Birkett. His present illness commenced three weeks before admission, when, in the middle of the night, he awoke with great difficulty of breathing, respiration being accompanied with considerable distress and pain. These symptoms increased much in severity, and presented the signs of pleuro-pneumonia on the right side.

On admission he was exceedingly ill; his countenance pale, his eyes glistened, lips and nostrils contracted, the teeth covered with sordes, the tongue brown at the base and edges, the skin hot and clammy. In the chest there was found to be increased roundness of the right side at the base, imperfect mobility, increased dulness on percussion, loss of tactile vibration, and in front, below the nipple, was a pleuritic rub. On the left side, the respiration was puerile, and at the apices, the expiratory murmur was prolonged and coarse. The position of the heart was normal; its sounds healthy, but the precordial dulness was somewhat increased; the respiration was twenty-six per minute; the pulse ninety-five, feeble and compressible; the urine was high-coloured, acid, sp. gr. 1025. His position, on lying in bed, was midway between the right side and the back, with knees drawn up, and the head thrown forward.

The prostration and typhoid state increased till June 14th, when deep-seated fluctuation below the ribs on the right side could be detected beneath the lumbar fascia about the quadratus lumborum muscle. An exploring needle was passed, and afterwards a director, and the wound enlarged; about a pint of pus, having a strong fecal odour, was discharged, the abscess continuing to discharge freely. After the opening of the abscess the respiration became more free, and he coughed up a considerable quantity of frothy mucus, having the same odour as the pus. His strength was sustained by nourishing food and stimulants—by quinine and opium; diarrhoea was occasionally troublesome, and the offensive expectoration exceedingly distressing.

On July 2d he had so much improved as to be able to be carried out into the open air for half an hour. The offensive character of the breath and respiration gradually subsided; healthy respiration became audible nearly to the base of the lung, and he continued to gain flesh.

In October he returned to his work, and then appeared a stout hale man; but a fistulous opening remained up to that time, which occasionally discharged freely. The sinus healed in about six months, and he now appears in sound health, May, 1857.

In this case deep-seated suppuration took place near the quadratus lumborum muscle, acute pleuro-pneumonia on the right side, and the most severe constitutional symptoms followed. The pus, which was evacuated, and the mucus expectorated, were of a most offensive and feculent odour; but microscopical examination of the pus could not detect decided fecal elements. Diarrhoea came on; the feculent character of the discharges slowly subsided, but the expectorated matters tried the patient much. Several facts render it probable, that the abscess was in close contact with the ascending colon; mere contact with the intestine would probably be sufficient to explain the fecal odour; and it may be, that the contents of the abscess were partially discharged into the colon.

In the investigation of the case, several modes of explanation were suggested: 1, an abscess, the result of the blow; 2, caries of the vertebra or its processes; 3, abscess of the liver; 4, empyema;

5, suppuration external to the kidney, from disease of that organ. Although there was evidence of acute disease of the chest, the abscess was evidently below the diaphragm, and probably in contact with it. The character of the pus, and the absence of the elements of bile, indicated freedom from hepatic disease. It is probable that disease of the vertebra or its process had been set up by the blow.

The treatment in both the cases just detailed appears sufficiently clear, as soon as tolerably certain evidence of suppuration is obtained, to make a free outlet for the pus, and to support the patient by every means in our power.

To defer the opening of the abscess, tends to increase fecal extravasation where it communicates with the colon; and the pus readily extends among the cellular tissue which connects the layers of fascia and muscle.

CASE CLV. Abscess in the loins. Opening into the ascending colon. Miscarriage. Pyæmia.—For the following case I am indebted to my friend Mr. Hardwicke.

Ann D—, æt. 37, was admitted into the Leeds Infirmary, December 12. She was a married woman, the mother of four children, the youngest being two years old; she had enjoyed tolerable health; but had rheumatism severely four years previously, and scarlet fever in her childhood. She had not menstruated since her last confinement.

When admitted, the uterus was enlarged nearly to the umbilicus, but she afterwards miscarried. Her present illness had commenced three weeks before admission (and before the miscarriage), she had not been suffering previously from any pain or disorder of the bowels. During the day of the attack she had been working hard, and awoke in the night with violent pain in the lower part of the abdomen, of a bearing down character. She thought that relief would be obtained by an action of the bowels, but found that she could not pass anything, and that the sensation of forcing and pain continued.

On the following day she got up, but fainted, and had a severe rigor. On the third day, she noticed that her abdomen was enlarged, chiefly on the right side; this was the seat of all the pain, and became so tender that she could not bear the weight of the clothes upon the part. Her left side had been free from pain throughout. The bowels remained confined for four or five days after the commencement of her illness, and were only moved by a second dose of purgative medicine. The constipation continued till the time of admission.

December 17. She appeared more thin and anxious, and had a slightly yellow tinge of skin. There were a few bronchial râles in the chest. The heart's action was irregular and intermittent, but unattended with any bruit. Her abdomen was large, the superficial veins being distended. On the right side above the ileum there was an elastic tender swelling, with apparent fluctuation in it; in front it was ill defined, but above was separated from the liver by resonant intestine. There were no symptoms to connect it with the kidney, and it did not extend into the right groin. The tongue was furred and white. The bowels were purged by medicine. The urine contained no albumen, but at times the colouring matter of bile in abundance. The pulse was irregular, and generally intermitted every fifth beat.

30th. The tumour had been gradually disappearing, and for the last two days could not be detected; there was also resonance at the part; she complained much of "rheumatic" pain in both her shoulders and elbows, but less of pain in her side; the bowels had been regular till this day, when she passed three or four large evacuations, consisting chiefly of dark coagulated blood. This continued till the following day, when she sank.

Inspection was made seven hours after death. The body was slightly wasted. The lungs were healthy in structure, on the right side there were firm adhesions at the base. The pericardium contained about $\frac{3}{4}$ ij of serum. The heart was a little enlarged, but there was no valvular change. There were redness and effused lymph over the peritonæum on the right side, and the cæcum was pushed a little upward and

glued by recent adhesion to the posterior wall of the abdomen, and to the transverse colon. The liver was large and fatty; the gall-bladder contained two calculi, each about the size of a marble. The spleen was rather enlarged. The kidneys large, soft, of loose texture, and showed but little distinction between the cortical and medullary structures. Numerous small cysts were found in their substance; the capsule readily separated. On detaching the ascending colon from its adhesions, which was done very easily, a quantity of dark clotted blood escaped, and the bowel was found to form the anterior wall of a large cavity, filled with coagulated blood. It occupied the position of psoas abscess, and extended behind the muscle, even for a short distance below Poupart's ligament. It was confined by fascia, and occupied the whole of the right iliac fossa. There was one small portion of fibrin in it, but no pus could be detected. Several nerves were found passing from the spinal column through the middle of it. The iliac vessels lay on the inner side and slightly in front of it. The artery was healthy throughout; the vein was roughened posteriorly, and formed a portion of the boundary of the cavity described. At the termination of the common iliac vein on the right side was a large irregular opening posteriorly, forming a communication between the vein and the cavity in the muscle. Above this point the vessel was healthy; below, and throughout the external and internal iliac veins, the coats appeared thickened, and the vessels were closed by firm adherent clot. Around the opening on the inner side, there were small excrescences of lymph, almost similar to those sometimes found on the valves of the heart. The lumbar portion of the spine was removed, and carefully examined, but no caries or other disease could be found. The sacro-iliac synchondrosis was sound, and no diseased bone could be detected at any part. The small intestine was slightly injected at one or two points. The large intestines were healthy, except the ascending colon; there was some vascularity, and an injected appearance in small isolated spaces. On its posterior wall were four or five large ragged openings, varying from the size of a sixpence to a shilling. There was a brown discoloration of the bowel for some distance around the openings, and the edges were thin, having the mucous membrane entire as far as the border. The peritoneal covering was roughened and uneven, being generally wanting round the edges of the openings, so as to give them a levelled appearance on their outer aspect. The colon contained a small quantity of blood. There was thickening of the cellular tissue about the uterus on the right side; and a circumscribed abscess, the size of a small orange, was found between it and the bladder; this was entirely distinct from the cavity in the psoas. The ovaries were small and flabby, and did not present any corpus luteum. The uterus was contracted to the size of an orange and felt soft; the os was dark and discoloured. The uterus was covered internally by a thin layer of dark clot, and to its posterior wall was firmly attached a fibrous mass of the same colour and appearance, as if a portion of the placenta had remained fixed. The structure of the walls was healthy.

Many of the earlier symptoms in this case arose from threatening miscarriage, after a day of hard work; and it appeared probable that a state of pyæmia was afterwards produced, and would have probably terminated fatally, if the hemorrhage from the divided cava had not led to comparatively sudden death. The cause of the abscess behind the colon, which extended into the cava, and afterwards into the large intestine, is not apparent; either after lifting, or hard work, there was some laceration of muscular fibre and subsequent suppuration; or it arose as one of the secondary deposits in pyæmia. It is exceedingly improbable that the vein was primarily lacerated; we are rather disposed to believe that ulceration perforated its coats. The extension into the colon was evidently from without, the larger size of the ulcer on the external aspect, and the sudden discharge of blood by stool, showed this to have been the case.

CASE CLVI. *Abscess in the hypogastric abdominal parietes. Simulating ovarian disease. Recovery.*—Emma N—, æt. about 25, a cook, was admitted, under my care,

into Guy's, October 13, 1856. She was a single woman, and had enjoyed good health till twelve months previously, when she had violent pain in the left side, which was said to arise from inflammation of the uterus, and she was leeched, poulticed, and blistered. Three weeks before admission, there was a swelling perceived in the left iliac region, which was exceedingly tender on pressure.

On admission, at the lower part of the abdomen, between the hypogastric and left iliac region, a tumour was detected, hard, unyielding, and slightly tender and painful on pressure; it extended obliquely towards the median line of the abdomen, and appeared to be beneath the muscles; there was no redness of the skin, and the pain was only manifested on pressure. There was no febrile disturbance, the skin moist, &c.; rest was enjoined, and the infusion of roses with magnesia prescribed. It appeared closely to resemble an ovarian tumour.

Ten days after admission, the tumour became more painful; and on the 27th, the skin slightly inflamed; leeches were applied, and cataplasms, &c.

November 2. The character of the tumour was now manifest, fluctuation was distinct, the pain superficial, and severe. On the 4th, the abscess was opened by my colleague, Mr. Forster, and a pint of pus evacuated. The abscess slowly healed, and on the 23d she left the hospital, convalescent.

CASE CLVII. *Suppuration external to the right kidney. Chronic pyelitis. Obliteration of the vena cava.*—Hugh M—, æt. 36, admitted September 12th, 1855. Six months previously, he had received a blow on his back, and suffered directly afterwards from hæmaturia; this discharge of blood continued for three weeks, and severe pain in the back came on. The pain continued, and gradually a swelling formed in the loins to the right of the spine. After the blow, he had several rigors, and some febrile excitement. The abscess in the loins was opened on November 26th, and from that date continued to discharge freely. He was a man of middle stature, with long thin hair, and a haggard cachectic appearance. The urine contained much mucus; stimulants and steel were prescribed.

November 22. He had gradually emaciated, but enjoyed his food; his bowels were regular, his tongue very clean; he had had swelling and pain in his right leg for two weeks. On December 19th, the abdomen and lower extremities were much swelled; the vessels on the surface prominent, and the larger capillaries of the skin intensely injected, as if new vessels had been formed; the skin was shining, white and tense. He was in considerable distress, and more prostrate, though not in urgent pain. He had a rather troublesome cough. His strength gradually failed, and he sank.

On inspection, January 7th, the abdomen only was examined. The œdema of the lower extremities, and the congestion of the vessels disappeared. The peritoneum contained about four quarts of clear serum; it was smooth and shining, except on the peritoneal surface of the bladder and in the right iliac fossa, where it was opaque and covered by numerous granules, from about the size of a pin's head to a pea.

The stomach and ileum were healthy, the lower part of the latter was of a gray colour. The whole of the cæcum and ascending colon was of a deep iron-gray, and contained much irregular pigment in the substance of the mucous membrane. The cæcum and ascending colon were so firmly adherent, and their walls so thinned posteriorly, that they gave way in removing them, even if they were not already in communication with the abscess behind them, which was probably the case. The whole of the peritoneum, and sub-peritoneal tissue around the right kidney, to the aorta, was much thickened, semi-cartilaginous, and contained a sinus filled with pus; this communicated with the opening made in the loins, and extended down as low as the pelvis. The aorta was normal; the vena cava, about two inches from the liver, was completely occluded by the thickening and fibrinous external deposit; its walls were irregular, puckered, and it contained a clot about the size of an ordinary probe. The right renal vein was obliterated, the artery normal. The left kidney was hypertrophied, the right kidney and the ureter contained opaque, concrete pus, distending the calyces; the secreting structure was destroyed, and surrounded by a dense fibrous envelop. The bladder was small, thickened, its mucous membrane somewhat irregularly granular. The dense tissue about the right kidney involved the right semilunar ganglion; it could with difficulty be dissected; the cells contained considerable pigment, and their nuclei were indistinct.

CASE CLVIII. *Inflammation and thickening external to the left kidney. Sinus opening in the loins, and at the dorsum of the ileum. Atrophy and strumous disease of the kid-*

ney. Liver fatty and lurdaceous. Phthisis. Carious ileum. Ulceration of shoulder-joint.—Eliza M—, æt. 26, admitted April 27, 1853, and died December 18th, at 7.30 A. M., under Dr. Barlow's care. She was a sempstress, a married woman. In November, 1850, the chair on which she was sitting broke, and she in falling struck her back and hip; she experienced no inconvenience for several weeks, when pain in the loins came on, and increased in severity. An abscess formed over the dorsum of the ileum on the left side, and another on the same side below the false ribs; the former communicated with carious bone. She had pain in micturition, and occasional bloody urine; there were symptoms of calculus, but no stone could be detected; subsequently symptoms of phthisis, and disease of the shoulder came on, and diarrhœa. She gradually sank, and died December 18th.

Inspection thirty-one hours after death.—The body much emaciated. There were pleural adhesions and vomicæ in the lungs. The right kidney was hypertrophied; the left scarcely two inches in length; its pelvis contained thin pus, and was lined by cheesy strumous matter. The ureter was obliterated near the kidney; there were also other smaller cheesy deposits in the gland. The fibrous envelop of the kidney was much hypertrophied, and dense fibrous tissue bound it behind to the fascia; above, to the spleen and supra-renal capsule. This tissue was very dense, posteriorly a sinus passed to the loins, and a second one to the dorsum of the ileum, the posterior surface of which was carious. The ureter on the left side was throughout much contracted. The bladder was granular; the uterus and ovaries small and healthy. Several ulcers were found at the lower part of the small intestine round and irregular; one at the ilio-colic valve, with thickening of the muscular coat. The cæcum contained several ulcers, and so also the appendix cæci. The appendix was long, and there were numerous tubercles beneath the peritoneum.

The blow on the loins was the exciting cause of the inflammation, external to the kidney; the character of the abdominal changes was, however, modified by a strumous diathesis, as shown in the low organized product found in the kidney and ureter; and in the character of the subsequent changes which took place in the lungs. It is possible that an early removal to the seaside, with perfect rest and generous stimulating diet, might have checked these degenerative changes and prolonged life.

CASE CLIX. Fecal abscess in pelvis, communicating with ovary and bladder, opening twice into the rectum, and in the groin.—Sarah Y—, æt. 24, residing in Lambeth-road, was admitted August 22. Till nine weeks before admission she enjoyed good health, and at that time, on going to breakfast, was taken ill with sickness, and great pain in the abdomen; after a few days she had rigors for three or four hours, and the pain, vomiting, and purging continued for seven or eight days; she then became more comfortable, and improved in health; one week before admission she was again attacked by vomiting, pain, and purging; these symptoms continued for three or four days. On admission her countenance was flushed, there was great pain in the abdomen, and intolerance of pressure; the countenance was anxious, and there was general tremor; the respiration was thoracic. She was somewhat emaciated, the thoracic viscera were healthy, the motions scanty and slate-coloured. She had menstruated a week before her illness came on, but during that period she always suffered pain.

Ten leeches were applied, and hydr. c. cretâ, gr. iij, and opium, gr. $\frac{1}{2}$, three times a day, were given, and low diet.

31st. There was great tenderness of the abdomen, the knees were flexed, &c. Ten leeches again applied, and poultice, and on September 4th 1 gr. of calomel and opium were given three times a day.

September 6. The pain increased, and on the 8th the bowels were relaxed, and the mouth became affected by the mercury. The diarrhœa continued, and became very troublesome. Dover's powder was then given, afterwards sulphate of copper and opium, and starch and opium injection used. The pain continued very severe till her death, and for some days the motions appeared to be of a purulent character. A few days before death a feculent abscess opened in the right groin below Poupart's ligament.

On inspection, the thoracic viscera were healthy; there were some pleuritic adhesions, but no tubercle.

Abdomen.—The general cavity of the peritoneum, except in the pelvis, appeared healthy; the viscera were collapsed; the small intestine was adherent to the brim of the pelvis, and to the cæcum.

The stomach was pale, but on microscopical examination it was found to be healthy. The small intestines were healthy; the colon, as far as the sigmoid flexure, was much contracted, and contained small scybalous grains, firmly attached to the mucus of the intestine.

The viscera of the pelvis were found to be firmly united by adhesions.

On taking out the uterus some superficial ulceration was found at the os uteri; the left ovary and tube were normal, but on the right, at the position of the Fallopian tube and ovary, was a sac capable of holding about 3ij of fluid, filled with purulent and feculent fluid; this abscess communicated by an irregular opening with the first part of the rectum; the communication with the rectum was not direct, but passed into an irregular abscess, containing feces, situated between the ovary and rectum. This fecal abscess extended downwards towards the bottom of the pelvis, and opened again into the rectum by a small circular opening about three inches above the anus; its boundaries were exceedingly irregular, burrowing beneath the pelvic fascia; it extended to the bladder, and had perforated its fundus by a circular opening; it also passed upwards to the psoas muscle, and reached the crest of the ileum; below it passed beneath Poupart's ligament, and at Scarpa's triangle formed a large ulcerative opening, about two inches in diameter, and covered by feces. The mucous membrane of the rectum was congested and gray; its calibre at the part between the two openings was diminished. The bladder was small, its mucous membrane red, but the cavity did not contain any feces, nor did it appear that any had passed by the urethra. The kidneys and spleen were healthy; the liver fatty, moderate in size: 2 lbs. 7 ozs. in weight.

In this case, inflammation appears to have commenced in the right ovary; suppuration followed, and local peritonitis; communication then took place with the rectum; fecal abscess was the result; this burrowed beneath the pelvic fascia, and formed several openings into rectum, bladder, beneath psoas muscle, and through the skin.

The diarrhœa proved to be tenesmus with purulent discharge, and is an indication of one of the fallacies in the diagnosis of dysentery. There was some ulceration at the os uteri; the severe pain partly arose, I doubt not, from pressure on the nerves in the psoas muscle, namely, ilio-hypogastric, lumbar, last dorsal, &c., and from attacks of local peritonitis. Had the diagnosis in this case been more clear, we doubt not that the mercurial and depletory measures would not have been employed to the same extent.

CASE CLX. *Abscess external to rectum leading to perforation. Considerable fibrous thickening, and simulating cancerous disease.*—Ann C—, æt. 55, a needle-woman, living in Bermondsey, was admitted into Guy's, March, 1857. She had been married eighteen years, and had had a child, now seventeen years of age. Till ten years ago she had enjoyed good health, when she fell and struck the sacrum; she suffered much, and was confined to her bed; since that time there had been a constant discharge from the rectum, with pain in defecation, and she had been unable to stand or walk on account of the pain. Seven years ago she was supposed to have inflammation of the uterus; but the catamenia had continued regularly till thirteen months before admission. For three or four months the left leg had been swollen, and for two months the abdomen had been tense and painful. She was a small, delicate woman; the abdomen tense and tympanitic. The chest was normal, the heart feeble. There was a constant discharge of mucus and slimy secretion from the rectum, and its calibre was much contracted. The urine was albuminous. Her strength gradually became exhausted, and she died in a few weeks.

The walls of the rectum were exceedingly rigid, dense and fibrous, and communicated with an abscess, or rather sinus on the concavity of the sacrum. This chronic inflammatory action had extended to the neighbouring parts, and led to stricture.

During life this was supposed to have been a case of cancerous disease, but the post-mortem inspection did not confirm this supposition, it showed that inflammation commenced after the fall, in the cellular tissue external to the bowel, and led to the dense fibrous constriction. This condition of rectum leads to abundant discharge of mucus, simulating diarrhœa or dysentery. A similar state of rectum was observed in a case under my own care, associated with albuminuria; there, however, limited to the walls of the rectum, and not, as here, produced by external inflammation. This case is another evidence of the severity of pain, where the inferior portion of the rectum is diseased, as compared with the immunity from it, in disease of the sigmoid flexure. The nerves are more easily compressed, and the outlet is also freely supplied with nerves of sensation.

CASE CLXI. *Multilocular ovarian tumour. Perforation of cæcum. Fæcal abscess. Pneumonia. Pus in the ovarian veins.*—Martha L—, æt. 33, was admitted into Guy's, December 12, 1855. She was a married woman, who had resided at Poplar. She had had five children, and the youngest was fourteen months old at the period of her admission; but before the birth of her child, she had had pain occasionally, of a severe character, in the left iliac region. After parturition, swelling of the abdomen increased, but with scarcely any pain for a time, when the exertion of walking produced severe pain; she stated that the tumour fell from side to side. Four months before admission great pain came on in the left iliac region, extending to the hypochondrium of the same side. The abdomen afterwards increased much in size, and the catamenia ceased. She had also suffered from diarrhœa.

On admission, she was pale, her countenance expressive of anxiety, but the mind active. The abdomen was swollen and tense, and the skin about the umbilicus was red and inflamed; there was dullness on percussion in each iliac region, but especially on the left side, and on that side a tumour could be felt extending towards the loins. The abdomen was tympanitic at the umbilicus, and for a short distance on either side. The urine was high coloured, and contained lithates. The bowels were relaxed; there was nausea and loss of appetite. She was ordered Dover's powder three times a day, a blister to be applied to the abdomen, and milk diet. The diarrhœa became persistent, and was with difficulty checked. On December 20th, paroxysmal pain in the back came on, and the abscess at the umbilicus had broken and discharged feculent pus, with relief to the patient; opium and chloroform were given. The fecal discharge through the parietes continued till death, which was preceded by an aphthous condition of the mouth, and by violent retching, vomiting, and aggravation of pain in the abdomen. She lingered till February 5th.

On inspection, acute inflammation was found at the base of the right lung; on the pleura at that part there was effusion of albuminous lymph, and considerable ecchymosis; the lung at the same part was consolidated, red, and granular. The bronchi contained much frothy mucus. There was granular deposit on the surface of the right auricle. In the abdomen, the stomach and transverse colon were found moderately distended, and from the umbilicus to the pelvis was a tumour, composed of ovarian cysts and connected with the left ovary; it filled the left iliac fossa in front of the sigmoid flexure. On cutting down the median line, an abscess was opened extending to the right, into the cæcum, the anterior surface of which was destroyed. The abscess was formed in front by the anterior abdominal parietes, which had become perforated; to the left by the ovarian tumour; to the right by the cæcum and kidney; below, by the fundus of the uterus, and by the rectum. The walls of the abscess were covered with lymph, and the cavity contained feces. The ovarian growth was six to eight

inches in diameter, composed of cysts, some capable of holding several ounces of fluid, others almost microscopic; the fluid was tenacious and gelatinous, the walls of the cyst vascular; near the cæcum one of these cysts appeared to be connected with the abscess. The large ovarian veins extending into the tumour were filled with thin pus. The right ovary was small and atrophied. The uterus was healthy. The mucous membranes of the cæcum and ileum were much congested. The stomach was pale, and presented gastric solution at its greater curvature. The liver, kidneys, spleen, and mesenteric glands were healthy.

The ovarian disease was the commencement of the fatal affection; one of its cysts had apparently become ruptured, and had been followed by local peritonitis and fecal abscess. It appeared probable that one of these cysts had become adherent to the cæcum, and had led to perforation. As to the character of the ovarian disease, it was of the ordinary multilocular character, and allied to carcinoma. The diagnosis of ovarian disease was not certain; movable carcinomatous tumours became developed in the omentum; and the position of the growth was that often presented by diseased glands about the kidney; it extended less into the loins, however, than is usual in the latter disease. The local peritonitis and perforation of the intestine were evident, and the treatment most likely to afford partial relief was that adopted; the administration of opiates and of nourishment to sustain the patient.

CASE CLXII. *Ovarian tumour filled with feces and opening into the ileum. Pneumonic phthisis.*—Catharine S—, æt. 47, was admitted into Guy's December 14th, 1853, and died March 23, 1854. She had been a washer-woman, and had resided at Clapham. For sixteen years the abdomen had gradually enlarged, but she had followed her occupation till five months before her death; when, during menstruation, she took cold, and suffered from pain in the abdomen. On admission there was severe pain in the whole of the abdomen, loss of appetite, thirst, and want of sleep. The countenance was pale, and of an anxious expression; the tongue brown, the skin hot and dry. Ovarian disease could not be detected by vaginal examination. Symptoms of pneumonic phthisis and pleurisy came on, and she died about three months after admission.

On inspection, the left pleura was found full of pus; the right lung contained a vomica, and presented indurated lung tissue around it. Peyer's glands were ulcerated. In the cæcum was a small ulcer, as well as in the appendix, which contained feces. The right ovary was diseased, and constituted a cyst, five inches in diameter, with thickened walls. The cyst was firmly adherent to the lower part of the ileum, and communicated with the intestine. It was filled with feces, and was adherent to the uterus at the lower part. The left ovary was atrophied; the cervix of the uterus elongated and thickened; the kidneys were pale; the liver fatty.

The commencement of the affection strongly indicated ovarian disease; suppuration took place in the ovary, and led to symptoms resembling peritonitis; pus was no doubt discharged by the bowel. Inflammatory disease was afterwards developed in the lung, and led to a fatal termination.

The following is one of a very unusual character, and the preparation is in the Guy's Museum, Nos. 2516 and 2517.

CASE CLXIII. *Extra-uterine foetation, opening into sigmoid flexure.*—Elizabeth H—, æt. about 20, who had led an irregular life, and had had a child eighteen months previously. On admission she was not aware of being pregnant; she had been ill for

six months, but had only been confined to her bed for three or four weeks. She was in a state of extreme prostration, and had obstinate diarrhoea; the evacuations consisted of blood and pus; there was slight tenderness of the abdomen, some fulness, but no defined tumour. She died sixteen days after admission.

Inspection. Abdomen.—In the pubic region there were firm adhesions, and there was a cavity bounded by the ascending colon, by the lower part of the sigmoid flexure; posteriorly by the rectum and sacrum; anteriorly by the parietes, by the pubes and bladder, and laterally by the pelvis. This cavity was filled with pus, and contained a decomposing foetus about three months old. There were traces of placenta; extending into the sigmoid flexure was an opening two to three inches in length and one in breadth. The uterus was small, and no decidua was present in it.

In the *Guy's Reports* of 1838, Dr. Bright records a remarkable case of abscess of the spleen, which perforated the descending colon; the diagnosis was exceedingly obscure.

The patient was a young woman, aged 25, much emaciated, of peculiar sallow complexion and anxious countenance; she had great uneasiness and pain in the abdomen, particularly at the scrobiculus cordis and right hypochondrium; food increased the pain; the vomiting was constant, sometimes directly after food had been taken; there was also occasional bilious vomiting; the tongue was dry and glossy; she gradually sank. On inspection, the lungs and heart were found to be healthy; the liver was hard and granular; the lower part of the spleen was occupied by an abscess, which was firmly adherent to the transverse colon, and which had opened into it. There was also an abscess in the left ovary.

The record of these cases shows their great variety; each one presents a difference in the symptoms, and must be separately considered. Great relief may be afforded in the earlier stages by local depletion, and later, in many instances, by opening the abscesses which may have formed by opium, and by the judicious administration of tonics and stimulants.

In each Section of our Work we have sought to show the leading characteristics of diseased conditions as manifested in the various portions of the alimentary canal; and to do this have given the instances themselves as facts from which each one may form their own opinion rather than depend entirely upon the deductions we have drawn from them. Such general conclusions, in most chapters, have preceded the cases upon which they are founded; and we leave them before our readers with the hope that they will serve further to elucidate the general symptoms, pathology, and treatment of diseases of the alimentary canal.

INDEX TO ILLUSTRATIVE CASES.

CASE

- I. Diffused inflammation of the throat.
- II. Diffused inflammation of the throat—ulceration of pharynx.
- III. Spasmodic condition of the pharynx and œsophagus—hydrophobia.
- IV. Dysphagia—mania.
- V. Poisoning by sulphuric acid.
- VI. Poisoning by nitric acid.
- VII. Poisoning by nitric acid.
- VIII. Diseased cartilages of trachea—ulceration of œsophagus.
- IX. Ulceration of œsophagus—perforation of trachea.
- X. Cancer of œsophagus—sloughing pneumonia, pneumogastric involved.
- XI. Cancer of œsophagus—communication with the trachea—pneumonia—diseased kidneys.
- XII. Cancer of œsophagus—gangrene of lung—cancer of cervical glands and thyroid body.
- XIII. Cancer of œsophagus, pancreas, liver, and stomach—pneumogastric involved—granular kidneys—chronic pleuro-pneumonia—fibrous tumour of uterus—cancer of supra-renal capsules and semilunar ganglion.
- XIV. Cancer of termination of pharynx—laryngitis.
- XV. Cancer of œsophagus—communication with trachea—cancer of lung and kidney.
- XVI. Cancer of œsophagus—death from inanition.
- XVII. Cancer of œsophagus—gangrene of the lung.
- XVIII. Cancer of œsophagus—pleurisy and diseased kidneys.
- XIX. Cancer of palate, with strumous pneumonia.
- XX. Cancer of œsophagus, left pneumogastric involved—pneumonia.
- XXI. Cancer of œsophagus—pneumogastric destroyed—pneumonia.
- XXII. Cancer of œsophagus—acute and chronic pneumonia.
- XXIII. Aneurism of the aorta and sloughing œsophagus.
- XXIV. Aneurism of ascending aorta, rupturing pericardium—communication of œsophagus with left bronchus.
- XXV. Rupture of the œsophagus.
- XXVI. Degeneration of the mucous membrane of the stomach—general strumous disease of glands—phthisis.
- XXVII. Thinning of mucous membrane, with the appearance of minute cysts (probably post-mortem), from the stomach of a man who died five weeks after taking chloride of zinc.
- XXVIII. Poisoning by sulphuric acid; death on the 11th day—destruction of the mucous membrane of the lesser curvature and pyloric extremity of the stomach—acute inflammation of the colon and small intestine.
- XXIX. Poisoning by chloride of zinc—Burnett's disinfecting fluid.
- XXX. Superficial ulceration of the stomach—diseased supra-renal capsules.
- XXXI. Superficial ulceration of the stomach and duodenum—phthisis—ulceration of ileum, cæcum, colon, and rectum—great intemperance.
- XXXII. Chorea—vegetations on the mitral—ulceration of the stomach.
- XXXIII. Chronic catarrh and superficial ulceration of the stomach, with intense congestion—disease of the heart—small, degenerated kidneys.
- XXXIV. Catarrh and superficial ulceration of the stomach—cystic disease of the ovary.
- XXXV. Superficial ulceration of the stomach—catarrh of the colon—cirrhosis.
- XXXVI. Superficial ulceration of the stomach—cirrhosis—diseased heart.
- XXXVII. Follicular ulceration of the mucous membrane of the stomach, with anasarca and diseased heart.
- XXXVIII. Follicular ulceration of stomach—burn—amputation—abscess in the lungs and spleen.

CASE

- XXXIX. Chronic ulceration of stomach—death from perforation.
- XL. Chronic ulceration of stomach, involving pneumogastric nerve—atrophy of the left lobe of the liver.
- XLI. Chronic ulceration of stomach, with painter's colic—perforation.
- XLII. Chronic ulceration of stomach, extending into the lung.
- XLIII. Chronic ulceration of stomach, extending to the diaphragm, and simulating pneumothorax.
- XLIV. Fecal abscess, connected with stomach, lung, spleen, and transverse colon.
- XLV. Perforating ulcer of the stomach, with a second chronic ulcer in the same organ.
- XLVI. Chronic ulceration of the stomach—fatal hemorrhage—perforation of splenic and pancreatic arteries.
- XLVII. Ulceration of stomach—fatal hemorrhage.
- XLVIII. Chronic ulceration, with villous growth, simulating cancer.
- XLIX. Syphilis—diphtheritic inflammation of the stomach—diseased kidneys—necrosis of the bones of the nose.
- L. Suppuration in the coats of the stomach.
- L*. Ulceration of the stomach, sloughing, paraplegia—softening of spinal cord—disease of vertebra.
- LI. Sloughing of the mucous membrane of the stomach—mottled kidney—anasarca—pneumonia.
- LII. Fibroid degeneration of pylorus—cicatrix of mucous membrane, with hypertrophy.
- LIII. Fibroid disease of pylorus—phthisis.
- LIV. Scirrhus pylorus—carcinomatous tubercles in the liver, on diaphragm, spleen, and kidney.
- LV. Medullary cancer of the stomach, having villous character.
- LVI. Villous cancer of stomach—cirrhosis—ascites.
- LVII. Colloid cancer of stomach and colon.
- LVIII. Colloid cancer of stomach, omentum, peritoneum, and rectum.
- LIX. Medullary cancer of stomach, liver, and lungs.
- LX. Chronic ulcer of stomach—cancer.
- LXI. Cancer of stomach—communication with colon—ulceration of cæcum and ileum—chronic phthisis.*
- LXII. Cancer of stomach.
- LXIII. Pyrosis.
- LXIV. Dyspepsia—pyrosis.
- LXV. Infantile dyspepsia—sudden collapse.
- LXVI. Hæmatemesis from cancer of the liver.
- LXVII. Anæmia, struma—vomiting and diarrhœa every other day—miasmatic.
- LXVIII. Hæmatemesis—vicarious menstruation—aggravated hysteria, simulating fever.
- LXIX. Hæmatemesis after great intemperance.
- LXX. Inflammation of bronchi—biliary hepatitis—inflammatory congestion of the duodenum.
- LXXI. Ulceration of the duodenum—perforation.
- LXXII. Chronic ulcer in the duodenum—carcinoma of the liver—jaundice—granular kidneys—obliteration of bile duct.
- LXXIII. Impaction of gall-stone near the duodenum.
- LXXIV. Perforation of duodenum after death by solution of gastric juice.
- LXXV. Acute enteritis.
- LXXVI. Enteritis, simulating mechanical obstruction.
- LXXVII. Sloughing ileus—peritonitis—large fatty kidneys—degeneration of the left lobe of liver—lobular pneumonia—small fatty heart.
- LXXVIII. Slight strumous disease of the mesenteric glands—fatal diarrhœa—pneumonia.
- LXXIX. Strumous peritonitis.
- LXXX. Strumous peritonitis—fecal abscess—artificial anus.
- LXXXI. Strumous disease of the mesenteric glands—obstruction of lacteals—ulceration of small and large intestine—dysentery—phthisis.

CASE

- LXXXII. Ulcerated colon—phthisis; no cough.
 LXXXIII. Phthisis—ulceration of rectum and sigmoid flexure—hemorrhage from the bowels—ulceration of the appendix cæci.
 LXXXIV. Unusually free cæcum.
 LXXXV. Unusually free cæcum—fatty degeneration of organs.
 LXXXVI. Cæcum inverted—phthisis—local empyema—large white kidneys.
 LXXXVII. Intestinal obstruction in the ascending colon—the cæcum twisted to the left side into the left iliac and hypochondriac regions.
 LXXXVIII. Cæcal distension and inflammation.
 LXXXIX. Cæcal distension and inflammation.
 XC. Cæcal distension and inflammation.
 XCI. Cæcal distension and inflammation.
 XCII. Cæcal distension and inflammation.
 XCIII. Cæcal distension with inflammation.
 XCIV. Cæcal inflammation, simulating hip-joint disease.
 XCV. Local peritonitis—cæcitis.
 XCVI. Cæcal disease—phthisis.
 XCVII. Perforation of the cæcum—abscess extending to the groin—phthisis.
 CXVIII. Bronchitis—phthisis—diseased appendix cæci.
 CXIX. Phthisis—ulceration of larynx; of ileum—concretion in the appendix.
 C. Pyæmia—necrosed humerus—cæcal disease.
 CI. Perforation of appendix cæci, by laminated concretion—fatal peritonitis.
 CII. Ulceration of appendix cæci—fecal abscess—secondary perforation of ileum.
 CIII. Fecal concretion—perforated appendix.
 CIV. Concretion in the appendix cæci—perforation.
 CV. Fecal concretion in the appendix—perforation—peritonitis.
 CVI. Ulceration of the appendix, with disease of the kidney.
 CVII. Cancer of the cæcum, abscess in the groin.
 CVIII. Cancer of cæcum, omentum, and lumbar glands—fecal abscess.
 CIX. Appendix cæci in inguinal canal.
 CX. Appendix cæci adherent with omentum at the internal abdominal ring—supra-renal capsular disease.
 CXI. Inanition—diarrhoea.
 CXII. Inflammation of colon—aphtha, or muguet of pharynx.
 CXIII. Diphtherite of colon—dysentery—chorea.
 CXIV. Inflammation of colon—hernia.
 CXV. Dysentery—ulceration of small intestine—perforation—fecal abscess—peritonitis.
 CXVI. Ulceration of large intestine—perforation—submucous suppuration—pus in the vena porta, and inflammatory patches on the liver.
 CXVII. Dysentery—perforation of colon.
 CXVIII. Chronic bronchitis—phthisis—cirrhotic and lardaceous liver—contracted abscess of the liver—chronic dysentery and chronic peritonitis.
 CXIX. Chronic dysentery—hepatic abscess—pyæmia—abscess in the brain and lung.
 CXX. Cicatrization and contraction of the rectum and sigmoid flexure after dysentery.
 CXXI. Chronic ulceration of intestine—dysentery—cicatrization—contraction—perforation—abscess near crest of the ileum.
 CXXII. Burn—muco-enteritis—small intestine—diphtherite.
 CXXIII. Dysentery—pneumonia—hydrocephaloid disease.
 CXXIV. Diphtherite of cæcum and colon—bronchitis—pneumonia—cirrhosis.
 CXXV. Inflammation of colon—rectum—false membrane—superficial ulceration—pneumonia, &c.
 CXXVI. Strumous peritonitis—diphtherite of rectum—chronic inflammation of the large intestine—tubercular lung—simple ovarian cyst—vascular excrescence of urethra.
 CXXVII. Constipation—pouches of colon—cancerous disease of the liver and lungs—bronchitis and emphysema.

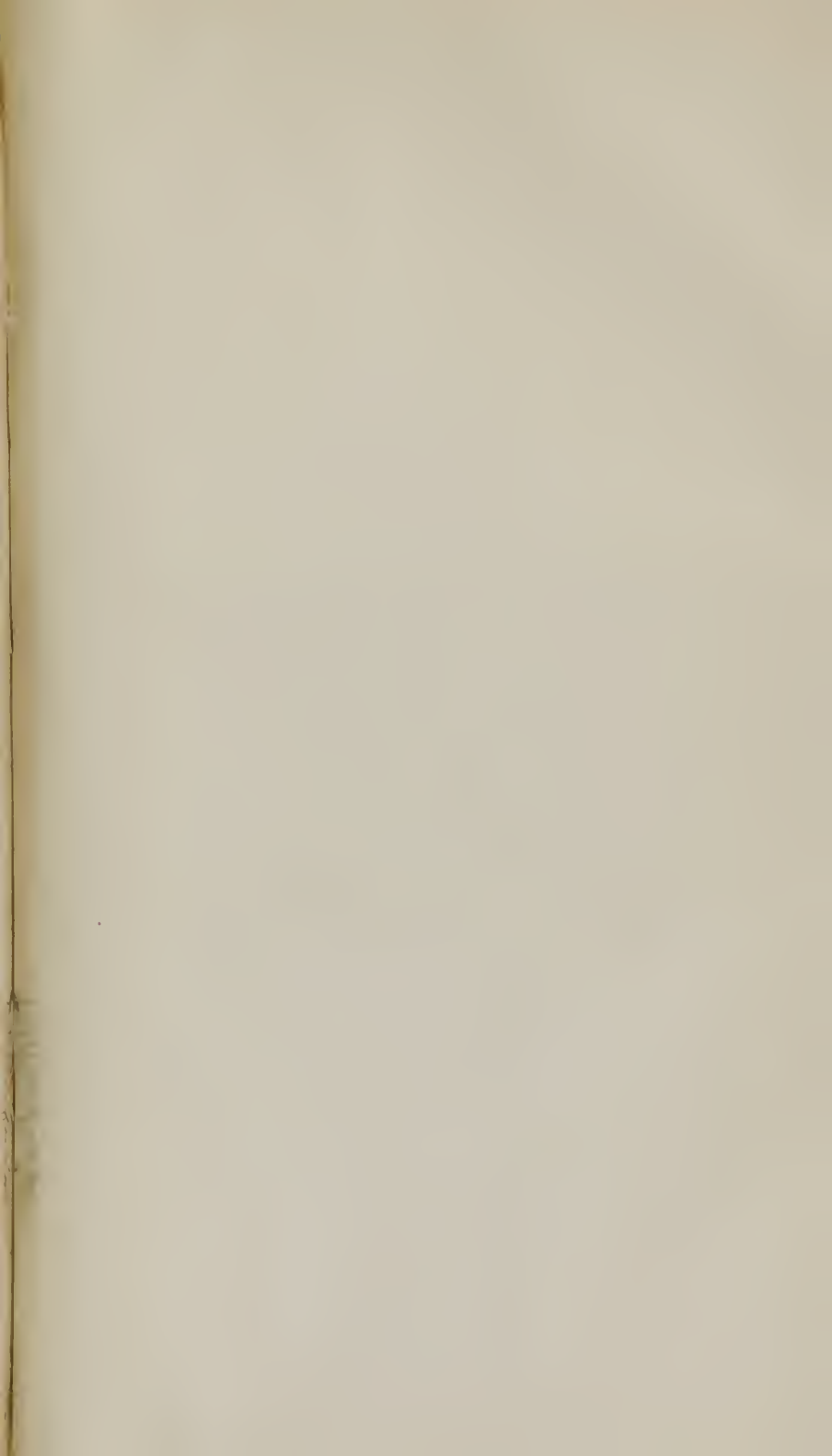
CASE

- CXXVIII. Internal strangulation of ileum—band of adhesion.
 CXXIX. Colic (lead?) simulating internal strangulation—recovery
 CXXX. Internal strangulation?—restored.
 CXXXI. Internal strangulation—band of adhesion to ileum, eight inches from cæcum—death on eighteenth day.
 CXXXII. Internal strangulation—loop of small intestine passed into a hole in the great omentum.
 CXXXIII. Internal strangulation of the last eighteen inches of the small intestine fatal after thirty-eight hours.
 CXXXIV. Mechanical obstruction, terminating favourably after seventy-eight hours.
 CXXXV. Internal strangulation and constipation—subsidence of symptoms—death from phthisis.
 CXXXVI. Lumbrici—diarrhœa—intussusception of the ileum and ascending colon into the descending colon.
 CXXXVII. Intussusception—recovery—cæcum and the whole of the ascending colon passed per rectum.
 CXXXVIII. Constipation—subsequent perforation—peritonitis—intussusception restored?
 CXXXIX. Villous or epithelial cancer of sigmoid flexure, with cancerous infiltration of glands near the gall-bladder.
 CXL. Cancer of sigmoid flexure.
 CXLI. Cancerous disease of sigmoid flexure—ecchymosis of stomach—ulcerated ileum—contracted mitral valve.
 CXLII. Cancer of liver, lumbar glands, and sigmoid flexure.
 CXLIII. Cancer of sigmoid flexure—constipation—death on the twentieth day.
 CXLIV. Cancerous disease of sigmoid flexure of colon—insuperable constipation—death on tenth day.
 CXLV. Cancerous ulceration of the sigmoid flexure of the colon—constipation.
 CXLVI. Cancerous disease of the sigmoid flexure—insuperable constipation.
 CXLVII. Cancerous disease of sigmoid flexure—constipation simulating hernia.
 CXLVIII. Cancer of sigmoid flexure—obstruction relieved—gradual exhaustion.
 CXLIX. Colloid cancer of sigmoid flexure—artificial anus in groin—pleuro-pneumonia.
 CL. Cancerous disease of sigmoid flexure—perforation—fecal abscess.
 CLI. Cancerous disease of intestine.
 CLII. Carcinomata of rectum—ovaries—peritoneum—acute peritonitis—scirrhus.
 CLIII. Suppuration external to the sigmoid flexure of colon, communicating with the intestine and the anterior abdominal parietes.
 CLIV. Abscess of the loins—feculent smelling discharge—pleuro-pneumonia, with feculent smelling sputum—recovery.
 CLV. Abscess in the loins, opening into the ascending colon—miscarriage—pyæmia.
 CLVI. Abscess in the hypogastric abdominal parietes, simulating ovarian disease—recovery.
 CLVII. Suppuration external to the right kidney—chronic pyelitis—obliteration of the vena cava.
 CLVIII. Inflammation and thickening external to the left kidney—sinus opening in the loins, and at the dorsum of the ilium—atrophy and strumous disease of the kidney—fatty and lardaceous liver—phthisis—carious ilium—ulceration of shoulder-joint.
 CLIX. Fecal abscess in pelvis, communicating with ovary and bladder, opening twice into the rectum and in the groin.
 CLX. Abscess external to rectum, leading to perforation—considerable fibrous thickening, simulating cancerous disease.
 CLXI. Multilocular ovarian tumour—perforation of cæcum—fecal abscess—pneumonia—pus in the ovarian veins.
 CLXII. Ovarian tumour filled with feces, and opening into the ileum—pneumonic phthisis.
 CLXIII. Extra uterine foetation, opening into the sigmoid flexure.

I N D E X.

- ABERCROMBIE, ulceration of stomach, 77
 Abscess, abdominal parietes, 295
 fecal, 80, 184, 231, 294
 Alcohol, poisoning by, 70
 Aneurism, dysphagia, sloughing œsophagus, 51
 rupturing pericardium, 51
 Appendix cæci, diseases of, perforation and concretions in, 170
 Ballard, Dr., on Pepsine, 107
 Baly, Dr., on Dysentery, 203
 Barlow, Dr., ulceration of stomach, 75
 ischuria renalis, 143
 internal obstructions, 254
 Beaumont, Dr., observations on Alexis St. Martin, 19
 Bird, Dr. Golding, chlorate of potash, 31
 Borax, use in diarrhœa, 212
 Bougies, œsophageal, use of, caution, 37
 Brinton, Dr., ulceration of stomach, 74
 cancer of stomach, 94
 stercoraceous vomiting, 254
 Bristow, Dr., case of ulceration of œsophagus, 38
 Budd Dr., gastric solution, 59, 108
 on dyspepsia, 108
 Cancer of œsophagus, 37
 stomach, 93
 cæcum, 189
 sigmoid flexure and colon, 260, 277
 Catarrh of stomach, 60
 colon, 194
 Cæcum, struma, abscess, artificial anus, 159
 diseases of, pathology, cases, treatment, 166
 inversion, abnormal freeness, 166
 obstruction at, 167
 distension, inflammation, 168
 perforation of appendix, concretions, 170
 perforation of, with ovarian disease, 304
 cancer of, 189
 discharged per rectum, after intussusception, 275
 Chambers, Dr., pyrosis, 109
 Chorea, dysentery, 216
 Cicatrix of ulcer of stomach, 91
 colon after dysentery, 223-224
 Colic, 233
 lead, 239
 with ulceration of stomach and perforation, 79
 varieties of, and treatment, 234
 Colon, inflammation of, poisoning by sulphuric acid, 64
 perforation of with diseased stomach, 79
 perforation of, with cancer of the stomach and phthisis, 102
 inflammation of, dysentery, cases of, 203
 Colon, pouches from, or hernia, constipation, 242-243
 cancer of, 260
 fecal abscess, parietal suppuration, 296-299
 Concretions, appendix cæci, 170-185
 Constipation, 242
 Crisp, Dr., perforating ulcer of stomach, 77
 Curling T. B., duodenum, ulceration of, 126
 Cysts, mucous membrane of stomach, 55
 Davies, Dr., case of chronic ulcer of stomach, 75
 Diarrhœa, varieties, causes, treatment, &c., 192
 Diphtheritic inflammation of stomach, 87
 colon, 216
 Diseases, connection of, 23
 Duodenum, diseases of, 123
 congenital malformation, 124
 congestion, 125
 ulceration, 128
 after burns, 126
 chronic congestion, 127
 chronic, 128
 mechanical obstruction, 131
 perforation by gastric juice, 134
 Dysentery, pathology, treatment, &c., 203
 with pneumonia, 225
 Dyspepsia, varieties, causes, treatment, 104
 Dysphagia, causes of, 26
 Enteritis, 135
 Extra-uterine foetation, opening into sigmoid flexure, 305
 Fecal abscess, dysentery, 219
 diseases of cæcum, 184
 stomach and colon, 80
 parietal suppuration, 296-298
 Fever, typhoid, 230
 Gairdner, Dr., communication of colon and stomach, 262
 Gall-stone, obstruction by, 131
 Gastric solution, œsophagus, 51
 stomach, 59
 duodenum, 134
 Gorham, Mr., intussusception, 257
 Gull, Dr., typhus and typhoid fever, case of, 231
 tænia, 291
 Hæmatemesis, 118
 Headland, Dr., on action of medicines, 21
 Hæmorrhage, œsophagus, 52
 from stomach, fatal cases of, 82
 Hepatic abscess, dysentery, 221-223
 Hernia, dysentery, 217
 Hunt, chlorate of potash, 31
 Hutchinson, Jon., dyspepsia in phthisis, 21
 intussusception, case of, 259

- Hydatids, perforation of duodenum, 133
 Hydrophobia, case of, 29
 Inanition, diarrhoea, case of, 202
 Inguinal canal, appendix cæci, 192
 Intussusception, 254-273
 Inversion of cæcum, 177
 Ipecacuanha, in diarrhoea, 201
 in dysentery, 212
 Ischuria renalis, 143
 Jenner, Dr. sulphite of soda, 112
 typhoid fever, 230
 Jones, Dr. Handfield, atrophy of mucous
 membrane of stomach, 54
 on pyrosis, 109
 King, Wilkinson, gastric solution, 59
 Lacteals, obstruction of phthisis, 163
 Laryngeal cartilages, disease of, dysphagia,
 27
 Lead colic, 239
 with ulcer of stomach, 79
 Liver, dysentery, abscess, 221
 Lumbrici, intussusception, 273
 Lung, gangrene of, cancer of œsophagus, 47
 extension of chronic ulcer of stomach, 80
 Medical Gazette, ulceration of stomach, 75
 lumbrici, 289
 Melæna, 196
 Mesenteric glands, disease of, diarrhoea, 149
 Morehead, Dr., on dysentery, 205
 Muco-enteritis, 135
 Murchison, Dr., gastro-colic fistula, 262
 Nitric acid, poisoning by, dysphagia, 33
 Obstruction of alimentary canal, gall-stone,
 131
 inversion of cæcum, 177
 internal strangulation, intussusception,
 carcinoma, pathology, cases, &c., 254
 Œsophagus, diseases of, 26
 spasmodic stricture, 28
 inflammation of, 31
 organic obstruction, 33
 ulceration of, 34
 cancer of, 37
 compression by aneurism or tumors, 50
 solution of, 51
 rupture of, 52
 Opium, use in cæcal disease, 175
 dysentery, 211
 constipation, insuperable, 264
 Ovarian disease, perforation of intestine, 304
 Pancreatic artery divided, gastric ulcer, 82
 Paralysis, of muscles of deglutition, 30
 Parietes of abdomen, suppuration, 295
 Parkes, Dr., on dysentery, 203
 Pathological Society, Transactions—
 Dr. Ogier Ward, diseases of œsophagus, 34
 Trotter, Mr., ulceration of œsophagus, 36
 Dr. Bristowe, " " 38
 Gray, Mr., cancer of œsophagus, 39
 Dr. Davies, chronic ulcer of stomach, 75
 Pavy, Dr., gastric solution, 60
 Pepsine, 107
 Perforation of stomach, ulceration, 73
 of duodenum, 129
 from dysentery, 218
 with intestinal worms, 289
 Pericardium, rupture of, by aneurism, dys-
 phagia, 51
 Peritoneum, strumous disease of, 154
 Philip, Dr. Wilson, pneumogastric in diges-
 tion, 21-115
 Phthisis, diseased larynx, dysphagia, 27
 with cancer of œsophagus, 40
 atrophy of mucous membrane of sto-
 mach, 57
 with diseased pylorus, 91
 with cancer of stomach, 102
 with disease of intestine, ileum, &c., 159
 with dysentery, 221-228
 Pneumogastric nerve, destruction of in dis-
 eased œsophagus, 39-41
 in chronic ulcer of stomach, 78
 Pneumonia, with disease of œsophagus, 39
 with dysentery, 225
 Poisons, dysphagia, 32
 Polypus in stomach, 92
 Potash, chlorate, use of, 31
 Pouches from colon, 243
 Pyæmia, dysentery, 222
 Pylorus, fibroid degeneration of, 90
 Pyrosis, cases of, &c., 108
 Rupture of œsophagus, 52
 Sigmoid flexure, cancer of, 277
 colloid, 283
 suppuration, external to, 296
 extra-uterine foætation, opening into, 305
 Splenic artery, divided in ulcer of stomach, 28
 Stomach, atrophy of mucous membrane, 54
 post-mortem solution, 59
 inflammation of, catarrh, poisons, 60
 superficial ulceration, 68
 follicular or aphthous ulceration, 72
 chronic and perforating ulcer, 73
 diphtherite, 87
 suppuration in the parietes, 88
 sloughing of mucous membrane, 89
 fibroid degeneration of pylorus, 90
 polypus, 92
 cancer, 93
 functional diseases of, 104
 Strangulation, internal, 254
 Strumous disease of alimentary canal, 146
 Sulphuric acid, poisoning by, dysphagia, 32
 destruction of mucous membrane of the
 stomach, 64
 Suppuration in the parietes of the abdomen,
 295
 Syphilis, diseased laryngeal cartilages, pro-
 ducing dysphagia, 28
 Thompson, Dr. Th., gums, &c., in phthisis,
 116
 Throat, diffused inflammation of, 27
 Trachea, diseased cartilages with ulceration
 of œsophagus, 35
 perforation of, 35
 Tympanitis, 255
 Typhoid disease of intestine, 230
 Ulceration of œsophagus, 34-37
 stomach, 68-86
 duodenum, 128, 129
 ileum, 159, 230
 cæcum and appendix, 169-184
 colon, 203
 Ward, Dr. Ogier, constriction of œsophagus,
 34
 Ward, Nathaniel, Mr., foreign body in ap-
 pendix cæci, 171
 Wilks, Dr., duodenum after burns, 126
 Worms, intestinal, 289
 Young, Dr., lumbrici, 289
 Zinc, chloride, poisoning by, 66



NATIONAL LIBRARY OF MEDICINE



NLM 03206197 7